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Macworld
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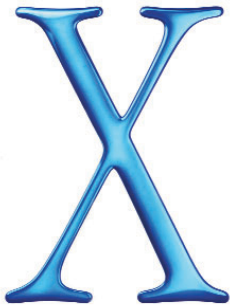
Simon Jary
editor-in-chief

Wow! Apple's actually beaten its own timetable to get Mac OS X pre-installed on all of its new Macs.

About time 2.0



"Apple used to launch a great new Mac, only to make it look outdated immediately by showing off something it invented that morning."

At *Macworld*, we often see amazing technologies demonstrated to us by fire-eyed developers. They say "Wow!"; we say "Wow!"; we write about it; you say "Wow!". Not long after you've shown the article to someone else, and they've said "Wow!", you start writing in and asking when Wow 1.0 will be available to buy. Then we realize that what we just saw wasn't anywhere near ready to ship. This is the point at which Wow turns to Oww...

Although, occasionally, Apple shipped products way before they were ready (the, ahem, Newton, for instance), the company used to pre-announce more stuff than it actually shipped. I remember witnessing demos for Sherlock, most of Mac OS 8 and tons of QuickTime features many years before they became a part of the on-sale operating system. The funny thing was that, after all those dormant years, these features hadn't changed a bit. They must have just been lying around on floppies and Zip disks gathering dust in Apple's R&D laboratories.

Maybe an absent-minded Apple boffin – his bottom still smarting from the Newton fiasco – mislaid these disks after they were returned from the demos.

"Geoff, where's that neat new QuickTime wavy effect everyone loved at Macworld Boston 1995?"

"Er... well, I think it's behind the prototype 15th anniversary Mac Portable by the water cooler, Frank."

Imagine them having to tell the head of software development that they'd *lost* search utility Sherlock. "I've got nothing to find it with, either, now..."

Steve Jobs realized that pre-announcing meant killing off all the stuff you can actually make and sell. Apple used to launch a great new Mac, only to make it look outdated immediately by showing off something it invented that morning. Steve's pre-announcements mean you won't be able to buy the latest Mac for a month or two – just time for Apple dealers to flog-off the remaining inventory at bargain prices. (In the past, Apple used to have to gather all its unsold stock and bulldoze it into desert landfills – I kid you not.)

Pre-announcing then became the preserve of the browser warriors. Every few days, Netscape or Microsoft would release a new beta of its Web browser. By the time, say, Netscape 2.5 was officially released, everybody was downloading the beta for version 3.0.

Now, the worst offenders for pre-announcement time-lags are games designers. Following his own show-it-when-it-ships policy, Steve livened up his keynotes by inviting young whippersnappers on stage to blow-up bug-eyed monsters and race alien buggies in unbelievable 3D action – extraterrestrial visions of in-flight space-blasting so incredible that they hadn't even been seen by the secret services of the high-tech warring factions of the planet Kabbula.

Bungie was the worst offender. First there was Oni... "Wow!". Then there was Halo... "Double Wow!". Several years after we all first looked forward to pretending to be lithe Japanese urban-shooter girls, Oni finally shipped for the Mac. It's now at least a couple of years since we imagined ourselves as body-armoured Halo space troopers, and still we wait. By the time Halo hits the streets, Steve Jobs will actually have a halo, and our great-great-grandkids will have been conscripted to fight the imperialistic Kabbulan forces somewhere in the ninth galaxy. Bungie's share price will explode (like an over-charged sonic-flashblaster) as thousands of 23rd-century Earthlings rush to play this now quaintly historical game on their Red Alsatian neuro-MacPads.

Pre-announcing products like these games isn't going to do companies such as Bungie any harm, as long as it also actually invents and ships a few things that people can buy in the meantime.

Pre-announcing operating systems and gleaming new computers could cripple Apple, and very nearly did during the pre-iMac dark days.

Now, Apple should be applauded for largely sticking to its Mac OS X timetable – and, in late May, actually beating it. According to the deadlines, Mac OS X was to ship as the default operating system "sometime this summer". This scary proposition has been bettered by Apple's far-more sensible announcement (see page 21) that, immediately, all new Macs will ship with OS 9.1 installed as default and OS X as an option.

Apple may very well be right that it's now possible to survive on Mac OS X alone. But it's equally true that, if you do go for it, you'll be relying heavily on X's Classic emulation. And there's only two things slower than Classic – E4's interminable daytime coverage of *Big Brother* and Mac OS X's own Finder.

Apple could have kept wowing us with Aqua demos while waiting to release a faster, more compatible update later this year. But that policy would inevitably have affected its Mac-hardware sales, as people waited for X-loaded systems rather than later having to pay out the extra £99. And software developers have been clamouring for Apple to jump-start OS X's proliferation. This early, more flexible move should help everyone.

This isn't unqualified praise for Apple's OS X efforts, however. While we no longer have to wait for X on our newly acquired Macs, customers new and old won't be too happy to be kept waiting and waiting and waiting for perkier X performance. Once that's achieved, maybe even the still-vociferous anti-X brigade will go "Wow!" as well. **MW**

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Apple's new iBook is a dream – both in terms of looks and performance.

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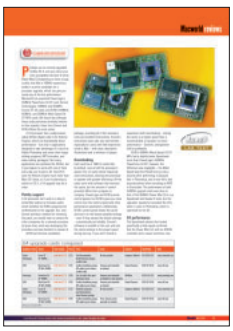
Get the scoop on five useful applications that come with Apple's new operating system.



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COVER PHOTOGRAPHY: MIKE LAYE

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EVERY MONTH

REVIEWS

Your Star Letter wins a copy of Office: 2001, worth £480!

We reward the best reader letter with a copy of Microsoft's Office: 2001 for Mac. This integrated package of business applications includes enhanced versions of the market-leading Word, Excel and PowerPoint programs, as well as the new Entourage – a personal-information manager and email client.
Write to: Letters, Macworld, 99 Gray's Inn Road, London WC1X 8UT.
Or email letters@macworld.co.uk. *Please provide full name and contact details.*

Subject: Appleless Apple
I've just read *Fortune* magazine's (**www.fortune.com**) profile of Steve Jobs. The most fascinating thing is his refusal to put licence plates on his Mercedes to avoid parking tickets. What does this bode for Apple products of the future? An iMac with no OS installed, so as to avoid crashes? A PowerBook with no battery, so as to avoid startup problems? Macs with no logo, so as to avoid pesky customers? Maybe the logical outcome of his no-number-plates tactic is the Apple retail store without a name – just a logo.
Rob McMinn

Subject: Free iBook
I bought a copy of the June 2001 edition of *Macworld* in WH Smith. The CD was not on the cover, but I asked a shop assistant and they fixed this for me.

However, even though the magazine boasted "New iBook Inside" on a bright yellow sticker, I could find no new iBook. The shop couldn't help me on this matter, so I turn to you. Please send my iBook as soon as possible.
Will Bramhill

Subject: Window of opportunity
In your review of Mac OS X, you noted that, like OS X, Windows XP will result in a similar upheaval for its users. However, Windows doesn't have the committed fans that the Mac OS has. Does Microsoft expect its casual users to learn a new OS? I don't think they will.
Ross Jelley

Subject: Apple Be missing out
Apple should buy Be, which is teetering on the edge of insolvency. Apple would then acquire an infusion of top-notch engineering talent, obtain cool Be technology to integrate into OS X, and secure a nice path to grow the OS past Windows 2000. Apple could buy Be for around $40 million – the engineers alone are worth that.
Dave Zihlman

Subject: Imperial or metric
Your review in the June issue of the new iBook has its details in pounds and dimensions in inches. Isn't it possible for someone on your staff to convert these to metric? I don't know many Mac designers still working in inches. I find this sort of thing as annoying as "color" and "trash".
Bill Kocher
The metric measurements were in the second paragraph of the preview on page 21. We do try to include both metric and imperial – we get letters from people who prefer pounds to kilograms, as well. – ed.

Subject: Crazy weirdness
How depressing to read Michael Prochack's War In NAMM piece in the March 2001 issue. It was essentially an extended complaint that it's now "easy" for a talentless nobody to get hold of a Mac and start making mediocre music.

It's similarly true that guitars and saxophones come with no talent included.

He declares: "there's no substitute for being able to play an instrument". There was a time when this was true. Now, that time has passed.
Paul Sellars

Subject: Retro iTunes
As I type this, I'm listening to radio music via iTunes, on a Umax Apus 3000 running system 8.6! We were told that iTunes would only work on 9.1. This wonder has been made possible via a free patch, available from **www.WormInTheApple.gr/downloads/index.html.**
Steve Howe

Subject: Aquq flab
Mac OS X's Aqua interface takes up too much room. My 1,024-x-768-pixel monitor looks like it's running at 640-x-480, thanks to those drop-shadows, anti-aliased text, and mega-icons.

Have Macintosh users been complaining that everything is too small? If I resize the Dock to the manageable width of the old Control Strip, then the eye-popping, screen-filling icons become illegible. Where is my readable, elegant, single-pixel Geneva 10-point? It's vanished in a fugging fog of blury pixels.
Pete Farman

Subject: Mind your language
In your OS X feature in June's issue you state that developers can write native OS X code in a programming language called Cocoa. However, Cocoa is not a programming language, it's the set of new OS X APIs that programmers can use to write their programs. The languages in which you write Cocoa apps are Java or Objective C.
Martin van Hensbergen

Subject: Doh! Selector
In trying to use the 2000 Issues CD, I can't access the October issue from the Issue Selector. If I click on the October front cover, I'm taken to the September issue. What can I do?"
Bob Evans
Apologies for this. Despite our checks, we all missed this error.

Within the Inside Macworld folder on this month's CD, you'll find a folder entitled 'letters'. This has two replacement PDFs. Drag-&-drop the entire 2000 Issues CD – not just the contents of the open window – onto your hard disk, and replace the Issue Selector and Read Me 2nd PDF files with the new ones. You should now be able to access all 12 issues from last year. You'll need just over 120MB of hard disk space for this.
Vic Lennard, Cover CD editor

Star Letter: OS 9.1 vs X

Your advice on upgrading to Mac OS X was spot on. Of course, even though I run a small business, I ignored it and purchased a copy of OS X. Just as you found, it's nice to use and great fun. But so many of the bits and pieces that hold daily life together – WebShuttle, scanner, big Epson printer – don't yet work with it, even in Classic mode. After a while, you get fed up rebooting to Mac OS 9.1, and go back to the old system to earn a living.

I eagerly await the arrival of upgrades of mainstream software and drivers, and intend to dip back to OS X at regular intervals to keep up to date. This is definitely the future. The best decision Apple made was to enable people like me to switch between systems as the world catches up with the advances in OS X.

One of the most exciting things about experimenting with OS X has been working with new bits of software: OmniWeb is a great alternative to Microsoft Internet Explorer, and I'm already a big fan of GraphicConverter. I'm sure I wouldn't have discovered these without Mac OS X.
Martin Whitfield

A 30-day tryout of Adobe Photoshop Elements plus trials of Spark XL 2.0 and MarkzScout 2.0 head up this month's CD. The latest demos, shareware and updaters are included – plus a stonking demo of Rune! Vic Lennard leads the way...

MAIN ITEMS

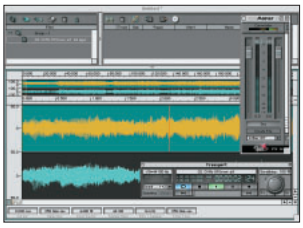
Photoshop Elements 30-day tryout

Adobe Photoshop Elements offers unique features for amateur photographers, hobbyists and business users who want an easy-to-use, yet powerful digital-imaging solution. State-of-the-art image-editing tools and flexible image-capture options let you work with photos taken with digital or traditional cameras, and versatile delivery features enable you to prepare images for print, email, or posting on the Web.

Requires a Power Mac with Mac OS 8.6 or later, and 64MB free RAM with virtual memory on.

Spark XL 2.0 7-day trial

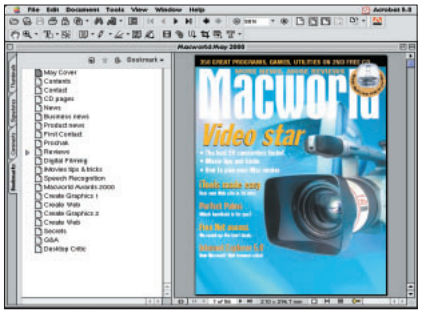
Spark is a two-track editor with 12 high-quality VST plug-ins plus DeNoiser and DeClicker for audio restoration. Create your own playlists and burn them to CD. Use the crossfade editor for detailed crossfading and fades. Includes cut, paste, pitch shift and time stretching. Requires a Power Mac with Mac OS 8.6 or later and 48MB available RAM.



Rune demo

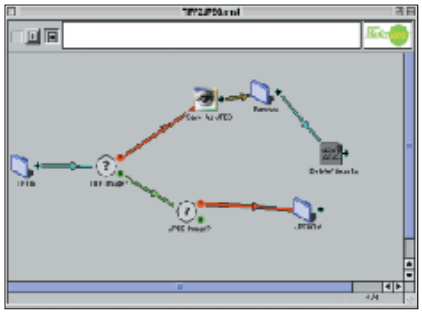
In this section of the full game, assume the role of Ragnar the Viking, mightiest warrior of a bygone age, who doles out justice on the blade of his massive battle-axe. Explore beautiful settings as Ragnar fights his way through stunning kingdoms to an ultimate confrontation with the shadowy warrior-masters of the netherworld.

Using the same engine as Unreal Tournament, Rune requires a Power Mac with 3D video hardware and at least 190MB of available RAM. Check the Read Me for more info.



Acrobat Reader 5

View, navigate and print PDF files. Version 5 saves copies of files downloaded in Web browsers and has improved usability, drag-&-drop toolbar icons and dynamic thumbnail generation, and support for Adobe Illustrator 9.0 graphics that contain transparency. Requires a Power Mac running Mac OS 8.6 or later. For Mac OS X, install in Classic mode but runs as Carbon.



MarkzScout 2.0 trial

Create your own automated workflow. Markzscout is designed to fit into any pre-press operation and streamline the preflighting process by detecting problems and then activating other applications to correct them automatically. Includes a new PDF creator and improved FlightCheck integration. Test it out fully for 14 days.

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Cover CD

JULY 2001

INSTALL

Before you start working your way through the software on our CD, go to the System Utilities folder and make sure you install the following:

Acrobat Reader 5
Install this version to be able to read many of the on-screen manuals.

StuffIt & RealPlayer
Version 6.0.1 of StuffIt Expander and DropStuff is included as is the installer for RealPlayer 8.

System tools & ATM Lite
The CD also carries the latest version of InternetConfig, UnZip 5.32 and ATM Lite 4.6.1 (required for Suitcase 9).

QuickTime 4.1.2
Some programs require QuickTime 4.1.2. This can be downloaded from www.apple.com/quicktime/download.

INSIDE MACWORLD

BBEdit 6.1

HTML and text editor designed for the editing, searching, transformation and manipulation of text.

Cubase VST 5.0

Professional music recording system that combines high-resolution MIDI sequencing with 16/24-bit audio recording. Demo.

Download Deputy Turbo

Download manager and accelerator in one package. Create lists of files you want and then downloads them later. Shareware.

Fetch 4.0

User-friendly FTP client that allows point-&-click, drag-&-drop file transfers. Works with Mac OS X. Fifteen-day trial.

UpdateAgent X

Easy way to update all the system software, control panels, extensions, applications and utilities on your Mac. Preview.

plus...

DoubleTalk 1.0.1 update
Fire.app 0.25.c
Extension Overload 5.8.3
Ultra Lingua ES-ENG
Ultra Lingua FR-ENG-MED
VCD Player 1.4.8

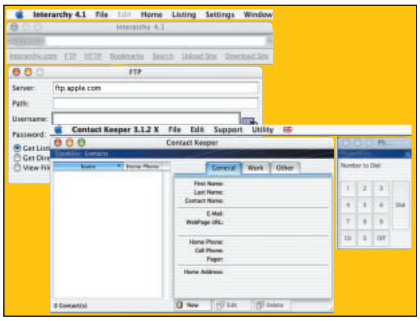
AmorphiumPro 1.1

Intuitive 3D modeller with real-time 2D brushes. Demo gives 24 hours of actual use.

CD CATALOGUE

Courtesy of Mark Pirri's superb DiskTracker program, Macworld brings you a searchable catalogue of all our CDs from 1997 to 2001 – over 221,000 files! This will grow month by month to allow you to find any file you want, without wearing out your CD-ROM drive. The latest version of DiskTracker (2.1.1) is also included – don't forget to register if you find our library useful.

OS X HEAVEN

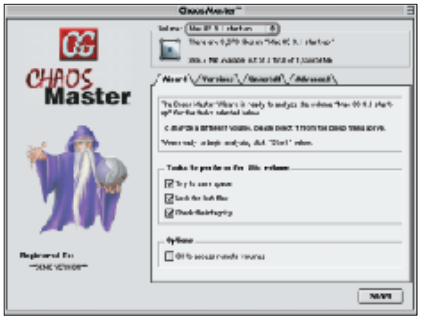


OS X Heaven – your monthly one-stop shop for the latest OS X-specific software. Utilities, demos, shareware and games – OS X Heaven features the best Carbonized goodies for the Mac's new OS.

This month there's 20 shareware utilities including Interarchy 4.1, a powerful and flexible Internet interface, Contact Keeper X for storing useful contacts, Prefling, a dockling that allows you to access all panels of the System Preferences directly from the Dock, and Mac Toolkit, an easy to use and convenient desktop utilities bar.

You'll also find three carbonized games including Tic Tac Toe A-GoGo which has the interesting feature of enabling the computer to cheat. Enjoy!

SERIOUS SOFTWARE *includes*

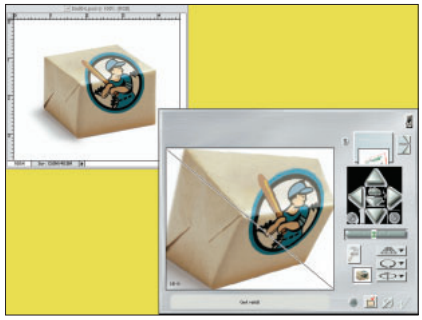


Chaos Master 1.2.1

Chaos Master delves deeply into the world of files and their inter-relations. It's also a utility to help you clean up your computer's hard disk. In fact, it's a collection of utilities that help you manage your files. Clean out old, duplicate or damaged files, update applications with help from VersionTracker.com, uninstall unwanted applications and related files, and much more.

This demo allows you to look around the program, to see how much space you could save, and to see how many unneeded files you could delete safely.

Requires Mac OS 8.1 or later and 5MB available RAM.



Andromeda Perspective demo

View and manipulate your image through Andromeda Perspective's "lens". This is a unique Photoshop compatible plug-in that uses a virtual camera in 3D space to introduce or enhance depth or perspective distortions in your images. Features include 360° rotation of images in any direction, consistent perspective in multiple images or in a string of text characters, and the ability to zoom in/out of an image with ease. Use factory presets with a visual interface or create your own. A quick and intuitive perspective tool.

This demo gives you full access to all features but is save disabled.

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Cover CD

JULY 2001

FAULTY COVER CD-ROM?

•If your cover disc is broken and you want a replacement CD, please contact Kelly Crowley, on 020 7831 9252, or email at kelly_crowley@macworld.co.uk.
•If your cover CD doesn't seem to work as it should, please check you have read all the instructions on the cover disc pages carefully first. If it still doesn't work, then please email Woody Phillips at woody@macworld.co.uk.

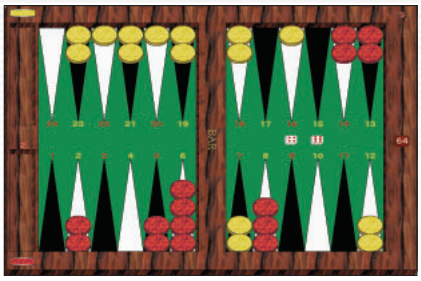
GAMES WORLD

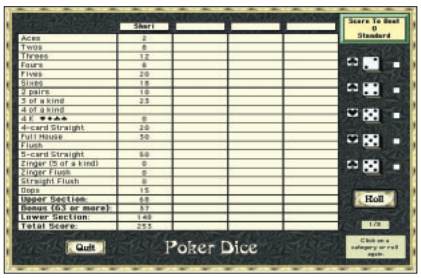
Mystery Island II demo

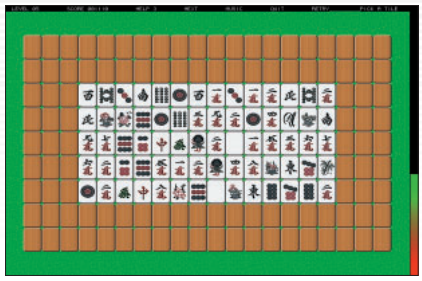
You are a navy seal serving on the USS Volarus when your submarine gets fired upon by an unknown enemy. The ship is blown to pieces, yet somehow you manage to survive. Drifting all night, you wake up in the morning on a sandy beach... somewhere. Walking around the island you find a strange communications panel. There is a message – aliens are planning to take over the planet and enslave all human life to mine its resources. There are three power boxes somewhere on the island sending rays up to a translucent sphere on the top of a mountain. You must disable them and destroy the portal.

Requires a Power Mac with QuickTime 4 and 16MB available RAM.

DEMOS & GAMES







As always, Macworld's Top 10 Shareware Games folder plays host to a range of interesting offerings.

David's BackGammon now reaches the big 4.0. New features include improved skills on the computer's side. Then there's a couple of Yahtzee-style games in Poker Dice 1.0 and Turtle Dice 2.1 plus the latest version of MacSolitaire.

On the strategy side we have Double 2.0.3, the latest demo of Take Away! and an excellent Chinese tiles game in Zador.

Arcaders among you will enjoy Elf Forest and Snake 1.2 while Legendary Lair 1.0.1 gives you an opportunity to put your role-playing adventure skills to the test.

(Top row) David's BackGammon 4.0 & Zador
(Middle) Legendary Lair 1.0.1
(Bottom) Poker Dice 1.0

ALSO ON THE CD

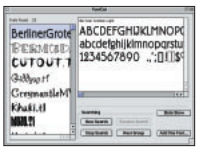
COMMS & INTERNET

12 applications including:
CreativePage 2.6.1
DupliMizer 2.0.1
HTML-Optimizer 5.0
Interarchy 4.1
NotifyMail 4.0.2

EDUCATION

Three utilities including:
Language Assistant 2.1.1
QuickTest 1.5

FONTS



Four items including:
FontCat 1.3.5
SmoothType 2.2.3

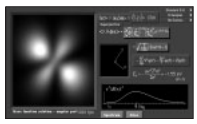
GRAPHICS

Four items including:
Etchelon Macdoodle 2.2
GraphicConverter 4.0.7
Screen Catcher 2.3.4

INFO

ATPM 7.05
WineBook 1.1
plus seven utilities for developers

MATHS & SCIENCE



Six items including:
Atom in a Box 1.0.6
earthbrowser 1.5
Periodic Table 2.6.2

SCREENSAVERS

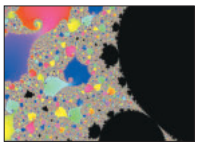
iScreensaver 1.5
Setting Sun 1.6

SOUND & MUSIC

Six programs including:
Amazing Slow Downer 1.06
MP3 Rage 3.3
Virtual Composer 2.8.2

UTILITIES

Seven categories with over 30 useful tools for your Mac including:



AltiVec Fractal Carbon
AutoCat 3.0.1
clipEdit 2.1.3
ConverTable Units 1.7.3
Default Folder 3.1.1
Doublet Scan 3.3.1
DragThing 4.0.2
Mac Army Knife 2.5.1

OneApp Clean Text 1.2.5
Pepper 3.6.5
Quick Rename 2.0
Rosetta 1.2.0
SwitchRes 2.5.1
TaskMenuBar 2.4.1
The Dailies 1.0.6
txt2pdf 4.6

UPDATERS

This month's dedicated updaters folder includes over 45MB of patches to bring many popular applications bang up-to-date, including:
Adaptec Toast 4.1.3 OEM
BBEdit 6.1 -> 6.1.2
Dreamweaver 4.01
FlightCheck 3.9r9
LaCie Updater 6.4.1
Norton AntiVirus 5-7 (05/01)
Retrospect Extension Upd
SoundJam 2.5.3
Toast Deluxe 4.1.3
Toast Titanium 5.0.1
Virex (05/01)
VirusBarrier (05/01)
VirusBarrier Updater 1.6
VST FireWire Updater 2.3.1

DON'T MISS...

Cool Extras

Shockwave Installer
Latest version of Macromedia's essential Web multimedia player.

ProcessGuard 3
View and control all running apps – background as well.

Mac ISPs

Internet access offers from Abel gratis, AppleOnline & LineOne.

Netscape/Internet Explorer

Complete packages for Netscape 6 (with 6.01 update) and IE 5.

Plus...

... many thanks to Simon Youngjohns for our CD icons.

SHAREWARE

Association of Shareware Professionals

Shareware is a distribution method, not a type of software. It makes fitting your needs easier, as you can try before you buy. Shareware has the ultimate money-back guarantee – if you don't use the product, you don't pay for it. If you try a Shareware program and continue using it, you are expected to register. Support shareware authors so that they continue to provide high-quality programs for the Mac.

25 Mac shops to open in US this year

Apple says 'Shop Different'

PHOTOS BY MACCENTRAL, EXCEPT GENIUS BAR BY LAURA DUNN

Grand opening
Apple CEO Steve Jobs minutes before the opening of the Tysons Corner store; a punter receives advice at the store's Genius Bar; you wouldn't see this at Dixons.

Apple CEO Steve Jobs has outlined plans to open a chain of plush Apple computer boutiques across the US.

"We'll open a new shop every ten days," promised Jobs, as he took the wraps off the first two outlets. Apple will open 25 shops across the US this year – with more in 2002.

The first Apple-designed shopping experiences are open now. One is situated just outside Washington DC at Tysons Corner, McLean, Virginia; another is in the upmarket Glendale Galleria in Glendale, California.

Apple's bold attempt to capture consumer mind-share (and credit-card details) has been public rumour for months. Jobs praised the move as "an amazing new way to buy a computer".

"Rather than hear about megahertz and megabytes, customers can learn and experience what they can do with Macs."

Stores will open for business across the US. Four are in Los Angeles, with more in: Birmingham, Alabama; Chicago; and Pittsburgh, Minneapolis. More stores will appear in New York, Ohio, Tennessee, Texas, Connecticut, Florida and Washington. The third store will open by the end of June.

"We want to convince people that Macintosh is much simpler, richer, and more human"
– Steve Jobs, Apple CEO

Jobs revealed that the prototype for the stores was constructed in a warehouse deep inside Apple's Cupertino campus. Store content and design was developed over two years by a stealthily recruited team of Apple executives, led by board member and Gap CEO, Millard Drexler (Jobs is also on the board of directors at Gap). The executive team is led by Apple's VP of merchandise, Ron Johnson – once of giant US discount retail-outlet, Target.

"We've seen a lot of smart people try their hand at retail and get their head handed to them," Jobs said. "We don't want to be one of them, so we've surrounded ourselves with experienced people."

Apple wants to increase visibility and capture market share. Five per cent of computer users are Macintosh users. "We've got to 'ambush' the other 95 per cent by being where they're already at, locating in high-traffic gathering places: malls, hip streets, and lifestyle centres," Jobs said. "We're going to be in top-tier locations."

Profit by Christmas

Apple's five per cent "is higher than both BMW's and Mercedes-Benz's share of the automotive market. It equals 25 million customers around the world using Macs. If only five of those remaining 95 people switch to Macs, we'll double our market share," said Jobs.

Johnson believes the stores will attract over 100,000 visitors a week during the Christmas period. Apple's CFO Fred Anderson affirmed: "We'll break even by the end of Christmas shopping, and show a slight profit next year."

Analyst reaction remains positive. AG Edwards analyst Brett Miller said: "Branded shops are material to Apple being able to sell more and different products to customers".

Needham & Company analyst Charlie Wolf said: "Stores are essential if Apple hopes to grow its installed base of users". He condemned the buying experience in major computer shops for Apple customers as "terrible".

Reputable US executive's bible *BusinessWeek* said: "Given the typical computer retailer's disdain for Macs, Steve Jobs can't open his string of upscale stores quickly enough".

Jobs 'blown away'

Opening day (May 19) saw 7,700 shoppers turn out between the two locations to spend $599,000.

"We are blown away with the numbers," said Jobs. "Customers have told us they love everything about the store – from the knowledgeable sales staff at the Genius Bar to the store's design and unique approach."

First-day customer, Patrick Donohue said: "Customers can see products in action. Apple has taken a real hands-on approach to selling computers."

Praising the Genius Bar, graphic designer Sean Copley said: "It's a Gap with Apple products. There's an aesthetic quality to using a Mac. It goes without saying that its store would be the same."

Apple retail staff receive a month's training in Cupertino, and must have great interpersonal skills, said Kathie Calcidise, Apple's VP retail operations.

Jobs called Apple's staff "craftspeople". Johnson said: "We want to select great people, train them well, hire great managers, and provide a great culture."

As a major venture, Apple faces all the traditional problems that beset retailers. Leasing space in upmarket areas is costly. Staff and training cost money. Distribution is less of a problem, but Apple must meet sales targets. *Business Week* observes: "Since PC-retailing gross margins are normally 10 per cent or less, Apple has to sell $12 million a year per store to pay for the space." Apple's advantage is that its margins could be as high as 30 per cent.

Summing up the plan, Jobs said: "We want to convince people that Macintosh offers a much simpler, richer, and more human-centric computing experience. We believe that the best way to do this is to open Apple stores right in people's neighbourhoods. **MW**

Dennis Sellers, Jim Dalrymple, Jonny Evans, Lauren Dunn

PHOTOS: PAUL HARRIS/BWP MEDIA
KIDS: MACCENTRAL

Apple's retail heaven
From top, and left to right: Opening day at the Apple store in Glendale, California; kids get somewhere to play, too; an iMac in the Home zone; PowerBooks in the Pro zone; customers get to try out Apple's systems with expert help at hand.

Apple plans friendly retail experience

Brightly designed, well-lit and spacious, Apple's big-city plush corner shops are designed to help customers get what they want. The shops try to capture the essence of the Macintosh-user experience, taking it out of the box and into the mall. Reflecting this, the front windows of each store mirror the Aquafied Mac OS X desktop.

Ten clearly sectioned areas focus attention on what using the Mac OS is all about.

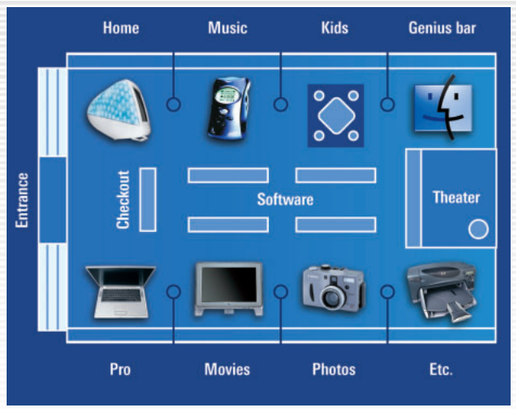
The Product area showcases current Macs. This area is split into "Home" and "Pro" sections. Solutions exists to help customers add value to their Macs, and has four sub-sections – Movies, Music, Kids and Photos. Among other things, these topical zones look at making desktop movies, creating digital prints, and burning custom CDs.

Kids can explore the latest educational and gaming titles. This section also carries a host of third-party "digital-hub extensions", including MP3 Players, digital cameras and camcorders, and PDAs.

Think Genius

Staffed by experienced Macintosh users, the Genius Bar supplies solutions to customers' Mac conundrums. Should a question stump the resident genius, then a single call on the hotline rigged up to Apple HQ provides an immediate answer, claims Apple.

The Theater is a presentation area with a ten-foot screen to demonstrate the company's award-winning software solutions, such as iMovie, iTunes and Final Cut Pro.



The Software section stocks 300 of the best-available Macintosh solutions, taken from a range of subjects – including those for small business and Web design. The Etcetera section hosts a wide assortment of third-party peripherals, including printers, scanners, graphics tablets, cables, paper, ink and other accessories.

Not just a showroom, the retail-therapy stores hold stocks on hand so customers can buy what they want when they want, according to Apple. MW

Dominique Fidéle

UK wants Mac stores 'immediately'

Apple won't discuss plans for international stores. However, the company has said that it's "exploring many geographic locations for stores".

***Macworld's* UK readers would welcome the move – 66 per cent want to see an Apple store on their street "immediately". For full details, see** www.macworld.co.uk/polls.

Apple UK is installing what it calls "Apple ecosystems" in carefully chosen stores. These are designed to show Apple products in the best light and to visually express Apple's user experience.

If Apple chooses to bring wholly owned retail outlets to the UK, what would UK resellers' reaction be?

Mygate's managing director Maneesh Patel told *Macworld*: "Limited numbers of stores won't provide the same service nationally. Resellers can provide a full range of products and services in places Apple stores don't reach."

Patel sees Apple's stores as physical manifestations of the online AppleStore: "Following initial concerns, we did not find that the online store really affected us. Apple stores could generate new users – which would be good for everybody."

David Shaw, purchasing director for onestopapple, agreed that: "Retail stores in the UK would create more demand for Apple products".

Looking forward, Patel said: "We'd work with Apple to create similar store environments in the UK. Such partnerships may be a way for Apple to extend its concept beyond US shores."

Jobs offers reassurance: "Our strategy isn't to put our resellers out of business, but to work side by side with them. Our stores will help resellers by increasing exposure to the Mac platform." MW

X for free with all new Macs

Apple CEO Steve Jobs surprised pundits and industry insiders alike at the Worldwide Developers Conference (WWDC), announcing that Mac OS X will ship in-the-box with all Macs from May 21.

Jobs also revealed Apple's plans to offer an all-LCD flat-panel monitor line-up, confirming rumours that its 17-inch CRT (cathode ray tube) monitor will be discontinued.

"We don't have to talk about the future any more. Mac OS X is here now," Jobs told the crowd of developers. "The reception has been so positive that we've decided to pre-install it alongside Mac OS 9 on all Macs. We said we were going to be pre-installing in July. We are going to move that up two months and are pre-installing today."

New Macs will ship with Mac OS 9.1 as the default OS, although Apple's Dual Boot technology means that "it's so easy to flip, we think many will," Jobs said.

Macs without OS X are still available in Apple's sales channels. To compensate, resellers have been shipped flat-pack versions of OS X, containing the OS X installer-CD. While supplies last, customers will be given these on the spot when they buy a Mac. Otherwise, if you bought your Mac after May 21, you can download a form from www.apple.com/uk/macosx/uptodate/uptodate.html, complete it and send it to Apple, and the company will post you a copy of Mac OS X for free.

"This will give all our customers access to the world's most advanced operating system and ensure a ready and lucrative market for Mac OS X applications," said Jobs. "This is a total commitment on Apple's part and we ask the same from you. The train has left the station."

However, low-end Cubes and iBooks ship with only 64MB of RAM. This is enough to run OS X, but not Classic. Apple recommends 128MB.

Apple flat out

Meanwhile, Apple's 17-inch CRT has been dumped in favour of a new 17-inch Studio Display – a digital LCD featuring a 1,280-x-1,024-pixel resolution for £699 (see page 90).

Apple also slashed the prices of its two digital LCD displays. The 22-inch Apple Cinema Display is now £500 cheaper, at £1,799, and the 15-inch Apple Studio Display is available for £449, a price cut of £130.

"Apple is the first company to move to an all-LCD display line-up – the all-digital desktop has finally arrived," said Steve Jobs, Apple's CEO. "Apple's complete line of affordable digital LCD displays are far brighter and sharper than the CRTs of old."

Apple claims its digital displays provide crisper images than analogue-driven flat-panel displays. The all-digital interface produces "sharp, flicker-free images that need no adjusting via user controls, such as those required by CRTs". The displays' active-matrix technology provides "extraordinary brightness and contrast with no image degradation".

Apple has also introduced Mac OS X in eight additional languages: Swedish, Danish, Norwegian, Finnish, Brazilian-Portuguese, Korean, and Traditional and Simplified Chinese. MW

Jonny Evans

Cost of CD-R media to rise

The cost of CD-R-media is set to rise, following last year's manufacturers' price war. Major manufacturers – thought to include Memorex, TDK and Verbatim – are expected to announce price increases of up to 350 per cent over the next few weeks. The manufacturing base for the media has shrunk since 1998, when between 60 to 80 companies produced CD-R discs.

Production reached 100 million discs per company per year. This led to a severe worldwide glut of discs. Industry insiders explained: "They were producing discs with no firm purchase orders from anybody." As the standard gained converts, demand increased by up to 84 per cent in 2000. Manufacturers slashed prices to shift their surplus product, assessed at one billion discs.

But now demand is set to outstrip supply. Global sales of CD-R media will reach 4.5 billion this year alone. MW

Apple is design king gong – again

Apple cleaned-up at the D&AD (British Design and Art Direction) awards again this year, taking three top awards in the Products for Work category. D&AD presented four Gold Awards this year; two for environmental design and architecture, one for ambient media, and one for Product Design – which Apple picked up for its Pro Mouse.

Silver awards were presented to Apple for its G4 Cube, Pro Speakers and Pro Mouse. Among those collecting awards for Apple at the ceremony – held at London's Earls Court 2 on May 30 – was Oren Ziv, director of creative markets for Europe (pictured right with TV's Ruby Wax).

D&AD is a professional association and charity that represents the UK's design and advertising communities. Its awards are internationally respected in the design and advertising industries as benchmarks of excellence.

Last year, Apple won a D&AD Gold Award for its Jonathan Ive-designed Cinema Display, while the Power Macintosh G4 and iBook scooped silver awards. MW

Jonny Evans

X-appeal reels in new apps

Apple continues to improve Mac OS X, with a raft of updates released in the past month. Among these is Mail Import Script 1.1, which imports messages from most email applications into Mail, the Mac OS X email client (for a review of Mail, see page 98). As we went to press, there was rumour of another imminent full-system OS X update. This follows the release of OS X 10.0.3 on May 3.

QuickTime Streaming Server has been updated to version 3.0.1. This adds skip-protection, Web-based administration, improved authentication and sturdier broadcasting support.

Key applications and peripheral-driver releases are more of a trickle than a flood. Many vendors are waiting for OS X's installed user-base to expand, in order to make their development effort worthwhile – something particularly true of publishing developers.

Office 2001 for OS X from **Microsoft** is due in the autumn, and many other key players are also waiting until then – expecting an increase in demand following Apple's decision to ship OS X with all new Macs from May 21 – two months ahead of schedule.

Microsoft has also released its free 5.1.1 update for Internet Explorer 5.1 Preview, which ships with OS X. It's available through Mac OS X's Software Update feature, but is unavailable on the Web. This update runs with Mac OS X 10.0.3.

Makers of third-party peripherals are answering the call from OS X early adopters for drivers. **Lexmark** is delivering on its promise to support OS X – drivers for its Z53 and Z43 series printers are now available as free downloads from the company's Web site (www.lexmark-europe.com).

Hewlett-Packard has also released a set of OS X printer drivers for its PhotoSmart 1000 and 1200 ranges of printers. These drivers replace those installed with OS X and are available from www.hp.com.

Adobe announced at the National Association of Broadcasters trade show that an OS X-native version of Premiere will be available "in the summer or autumn of this year". Version 5 of Adobe's Acrobat Reader also now runs natively in OS X – although Adobe stresses that it has not been fully tested.

Font of knowledge

Adobe has announced that it will not make its ATM Deluxe font manager OS X-native. However, Extensis and DiamondSoft do plan on updating their font-management products – Suitcase, and Font Reserve respectively.

Macromedia's X-compatible £279 FreeHand 10 vector-graphics application is available to buy. Features include Master Pages, tighter integration with Macromedia Flash 5, and the ability to publish both on the Web and in print.

FileMaker Pro 5.5, from **FileMaker**, offers native support for Mac OS X. This database solution makes full use of Aqua, Mac OS X's slick new user-interface. This version offers improved Web-publishing features. (www.filemaker.com).

Apple recommends that OS X users frequently run the built-in Software Updates preference to keep up-to-date. There are also are third-party solutions that will track software updates for all installed applications. Update Agent X from **Insider Software**, and TechTracker Pro OS X. TechTracker is free for a 30-day evaluation from www.techtracker.com.

A beta version of Norton AntiVirus 7.0.2 has been released by **Symantec**. It scans OS X discs for viruses, and is available for a free trial download. (www.symantec.com).

The delay in delivering key applications to Apple's Unix-powered platform has presented an opportunity to both smaller and established developers.

One such developer is the **Omni Group** (www.omnigroup.com), which has dedicated itself to making "software development fun again". It calls OS X "the most rewarding platform available to develop for". Its NeXT-programming background has led to the release of a slew of products. Foremost among these is OmniWeb, which has won much praise for its graphics rendering (see Reviews, *Macworld*, June 2001). Other Omni products include OmniGraffle, a charting and drawing program, OmniOutliner, a project manager, OmniDiskSweeper, a file manager, and OmniObjectMeter, a developers app. The Omni Group also has some free software for download.

Other developers are concentrating on general-purpose software. **StimpSoft** has released Son of Weather Grok (www.stimpsoft.com/products/sonofgrok.html). This offers hourly updates of temperatures worldwide. And **Iconata** (www.fabricata.com/iconata) is a tool from Fabricata (see below) that customizes icons in OS X. **MW**

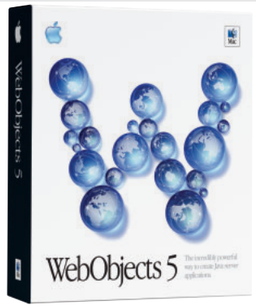
By Jonny Evans and Dominique Fidéle

On the CD

■ BBEdit 6.1 from Bare Bones Software (www.barebones.com) is the first version of the HTML and text editor to run natively on Mac OS X. FTP support is improved. The application costs £99 and is available from Mygate (020 8297 9699).

■ Fetch Softworks' (www.fetchsoftworks.com) $25 Fetch 4.0 has become the industry-standard app for FTP (File Transfer Protocol). Mac OS X-compatible, it uses the Aqua interface and is also compatible down to System 7.

■ Insider Software's (www.insidersoftware.com) UpdateAgent X is an updater for Mac OS X. It can automatically download the latest Carbonized versions of software, and holds information for 5,000 products. It costs $9.95 for a single user.



Java 5 alive

Apple has announced version 5 of WebObjects, its pure Java-based application server for Web publishing and in-house enterprise application development. Its solutions can be hosted on any Java-compatible server.

Apple's own online AppleStore is hosted on two Mac OS X Servers, and was constructed using WebObjects. Another high-profile UK client is the BBC, which uses the application for its online presence.

Built-in tools include a Project Builder, Direct to Web and Direct to Java for three-tier Web and Java applications, and WebObjects Builder, to simplify the design of HTML interfaces. Tools for database modelling are also built-in.

At the heart of the new £492 version 5 is Java 2 Standard Edition version 1.3 runtime. Java 2-accredited servers include Mac OS X Server, Solaris 8 and Windows 2000 Pro. MW

X-rated Server goes Aqua

Apple has announced its summer range of G4 servers – the single-processor 533MHz Power Mac G4, and dual-processor 533MHz Power Mac G4. Both ship with Mac OS X and OS X Server installed.

The Macintosh Server G4 with a single 533MHz processor, 256MB RAM, 60GB hard drive and Mac OS X Server Unlimited Client Edition costs £2,099 (ex. VAT). The hardware features are otherwise identical to those of the 533MHz Power Macintosh.

The £2,799 dual 533MHz processor Server G4 also offers 256MB RAM, 60GB hard drive and Mac OS X Server Unlimited Client.

A souped-up version of this model with a 72GB Ultra160 SCSI hard drive, and dual-channel SCSI card costs £3,849.

Apple's iServices team is offering Mac OS X Server training courses and certification programs for system administrators.

All Apple's server systems ship with four-port ethernet cards so the servers can serve up different sites on different ports over different connections – or multitask as both a mail and a Web server.

Apple announced Mac OS X Server, WebObjects 5 and new G4 Power Macintosh server configurations to developers gathered at the company's Worldwide Developer's Conference (WWDC) in May (see page 23).

Mac OS X Server is now built on the true Mac OS X release. Reflecting Apple's platform-level shift to a Unix-based operating system, it integrates a variety of powerful server applications. These include the industry-standard Apache Web Server, which powers 63 per cent of Web sites, according to Netcraft's April 2001 Web Server Survey. Other sophisticated OS X Server features include Samba for Windows file sharing, WebObjects 5 and QuickTime Streaming Server 3. The applications' cutting-edge features are accessed through Apple's user-friendly Aqua user interface.

Power, simplicity, elegance

The new iteration integrates all the server functions of the previous version of Mac OS X Server, and adds all the features of AppleShare IP and WebObjects 5.

Apple's vice president of worldwide product marketing Phil Schiller claimed: "Mac OS X Server has the power of Unix, yet is simple and easy to install, administer and maintain. It's Apple's most powerful server ever and can integrate with Mac, Windows and Unix networks."

Because this version of Apple's Server solution fully implements all the features of its Mac OS X release, users also get protected memory, pre-emptive multi-tasking, symmetric multiprocessing, advanced memory management and full implementation of all the latest networking and security standards.

Apple is also proud of its built-in fault tolerance systems. These have been developed to automatically detect and recover from failures in system services. This means network admins can set the server up to reboot itself if the whole system fails, and to apply its own fault-tolerance diagnostic and repair in the event of individual application failures.

The server is also controllable remotely. Administrators can change settings or apply security adjustments from wherever they happen to be. Apple says the implementation of such fault-tolerance systems also reflects the company's unique ability to offer full integration between its software and hardware.

Mac OS X Server will control intranets and internal networks, too. It can share files and printers with Mac, Windows, Unix and Linux clients and offers a host of useful network features. One major advantage of its implementation is the fact that a Windows user can log on and see all devices (printers, for example) attached to a network.

The NetBoot feature permits users to create a single image of the operating system accessible by client computers on the network. In this way all the Macs on a network can sing from the same hymn sheet. OS X Server can support up to 50 clients from one server, with the client Macs booting up from the server rather than their internal drives.

The Macintosh Manager feature lets administrators create small, individual disk images on the server. Privileges (such as application access) can be defined for each disk image. Built for use in corporate and educational environments, this feature makes it a complete no-brainer to ensure that users saving work do so to the server, rather than to their own hard drives. Whenever users on the network log in – no matter from which machine – this feature means they will see their own desktop and files.

User-friendly Unix

"We've done a great deal of work to make the system admin more user-friendly. We've also added the ability to define access privileges for each user," said Apple UK's Stuart Harris. "It's possible for a user to get all their documents and applications from the server".

The Server also offers full support for email protocols, including SMTP (Simple Mail Transfer Protocol), (Internet Message Access Protocol) IMAP and POP (Point of Presence). These three protocols are used every day to enable email over the Internet.

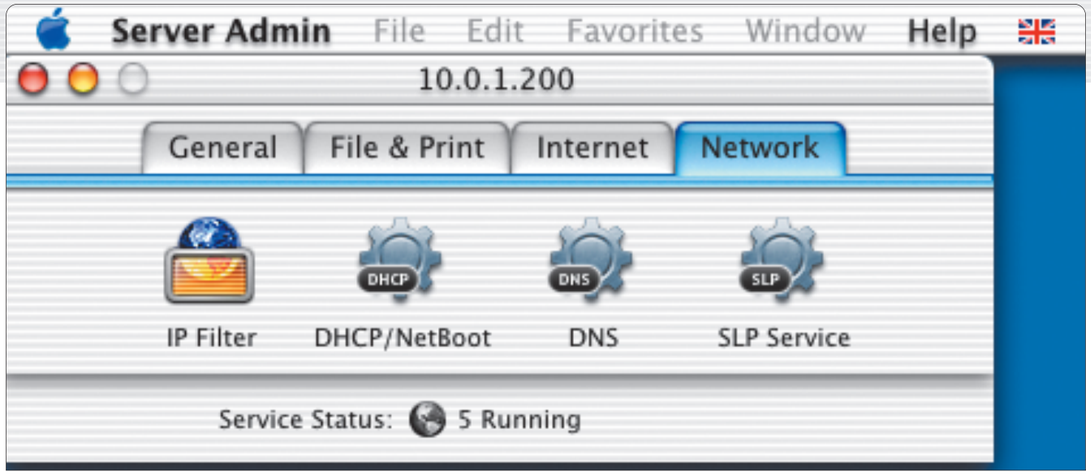
The Server also supports WebDAV. This is a set of extensions that enable collaborative Web publishing and remote-content management. The World Wide Web Consortium hopes that WebDAV will one day let users collaborate over the Web in the same way some already do over corporate intranets.

It also has a built-in IP filtering Firewall, and is capable of deploying a series of IP addresses for a network – called Dynamic Host Configuration Protocol or DHCP. This DHCP support offers users greater security.

Confirming this stress on security, Apple announced that it has taken a seat on CERT (the Computer Emergency Response Team Co-ordination Center), the Internet hacking watchdog organization funded by the US government.

Mac OS X Server is available in both ten and unlimited client varieties. The ten-Client edition costs £339 (ex. VAT), while the unlimited client version costs £680. It costs £339 to upgrade from the ten-client to the unlimited-client version of the solution. **MW**

Jonny Evans



"Mac OS X Server reboots itself if the whole system fails, and applies its own fault-tolerance diagnostic and repair in the event of individual application failure"

ATI readies next-gen 3D graphics

ATI, which supplies graphics cards for Apple's iMacs, iBooks and PowerBooks has unveiled a new rendering technology called Truform, which is supported in OpenGL and designed for future generations of graphics processors. It adds detail to 3D objects, making them look more natural by giving them smoother surfaces with more accurate lighting.

In games and computer graphics, 3D images are composed of triangles. The more triangles, the higher the level of detail and realism. However, adding triangles takes time, effort, memory, and bus bandwidth.

Truform uses a new type of higher-order surface composed of curved triangles – PN Triangles, dubbed "N-Patches" by ATI – that permit surfaces to be generated entirely within the graphics processor. And it doesn't require any more bandwidth or memory.

Easy implementation

What's more, for existing 3D artwork composed of flat triangles, Truform doesn't require significant changes but rather enhances those models by adding triangles within the current form. This makes Truform compatible with older graphics processors, and therefore easier for software developers to implement in their games.

"N-Patches also allows for a higher level of scalability, meaning the number of triangles or polygons in a 3D image can be varied according to the capabilities of the installed graphics hardware," said Toshi Okumura, ATI senior product manager of desktop marketing.

"N-Patches can take 3D models with low polygon counts and generate smooth, highly detailed images, affording most users a greatly enhanced visual experience with no compromise in performance," added Okumura.

ATI expects to ship Truform-enabled chips for both PCs and Macs before the end of 2001. And because the company has been working with game developers on Truform since November, ATI expects several games that utilize the new technology to ship around the same time.

Mathew Honan

Apple seals default ISP deal with Demon

Apple and Demon have forged a multi-year alliance that makes Demon the exclusive Internet Service provider (ISP) in Apple's Internet setup software included with all Macs sold in the UK. Previously, Apple offered a choice of ISPs at startup, including BT, Direct Connection and Demon.

When new users access Apple's Internet Setup Software feature they will be directed through setting-up and installing a Demon Internet account. Demon's basic dial-up account costs £11.75 per month. Apple will make a "substantial amount" from Demon for each customer signing up to the service.

Demon promises a "full range of well-priced services" for Macintosh users. New users will get a 30-day free access trial if they select Demon as their ISP. Of course, users do not have to choose Demon, and can pick any Mac-friendly ISP – including several free services.

The deal is Apple's first outside of the US. Apple partnered with EarthLink at San Francisco's Macworld Expo 2000 – see *Macworld*, March 2000.

Demon won the 'Best Overall ISP' award in *Net Magazine's* June 2001 ISP survey, and is the most popular ISP for medium-sized businesses, according to a recent Oftel survey.

The partners are expected to announce a number of services exclusively for Macintosh users. They revealed that they have been working together for four years to create the best "Internet experience" for UK Macophiles online. MW

So long, Douglas Adams…

Macs, the universe and everything

In *The Hitchhiker's Guide to the Galaxy*, Deep Thought, a "stupendous supercomputer the size of a city block," requires 7.5 million years to answer "the ultimate question of life, the universe, and everything."

The answer (42) is pretty close to the number of Macs Douglas Adams has owned. Adams used his Macs to experiment with interactive fiction and online games – such as his own, Starship Titanic (see right).

We spoke to Adams during last year's July New York Macworld Expo. Here's an interview extract:
MW: **Just how many Macs do you currently use?**
Adams: **My main ones are a PowerBook and a G4 with a Cinema Display. I have an embarrassingly large number of old Macs: some iMacs, a blue-and-white G3. My oldest Mac these days is a 20th Anniversary Mac, which I want to set up for Internet radio.**
MW: **Which piece of Mac-related paraphernalia can't you do without?**
A: **The Cinema Display. It is a stupendous piece of kit. I use Final Draft and Inspiration a lot. And Microsoft Word, I suppose. Also, iMovie has been a bit of a revelation for me, and I'm working my way up the nursery slopes of Final Cut Pro.**
MW: **Pick an iMac flavour.**
A: **Mint. A completely clear iMac. An obvious gap in the range.**
MW: **What was it like making your first iMovie?**
A: **I loved it. I've done a bunch of iMovies since then as well. In fact, I'm going to have to scrub that software off my machine soon, or I'll have too much fun and not do enough work.**
Interview by Adelia Cellini

British AppleMaster Douglas Adams, author of *The Hitch Hiker's Guide to the Galaxy* (HHGG) radio/novel/TV series, died suddenly aged 49 on May 11 in California following a heart attack.

At the recent Macworld Awards ceremony in London, another literary Mac fanatic, noted comic and close friend of Adams, Stephen Fry told the audience that he believed himself the owner of the third Mac ever purchased in the UK – Douglas Adams had bought the first two.

Adams described his relationship with the Mac as "love at first sight".

"It was the first time I came across a computer that seemed to be designed by someone with a creative imagination," he said in an interview on **www.apple.com/applemasters/dadams**.

"I've been a Macintosh user for as long as there have been Macintoshes, right from the very first one. It was elegantly thought out, intuitive, and it was such a pleasure to use that you wanted to hug it. It was also ludicrously slow and underpowered, of course, but that was a small price, as Butch Cassidy said in the movie, to pay for beauty.

"Most of the people I know use Macs, and it feels like we're a privileged minority, though the odd thing is that, unlike Mercedes' or BMWs, they are not significantly more expensive than the competition. Why does anybody use anything else?" ruminated Adams.

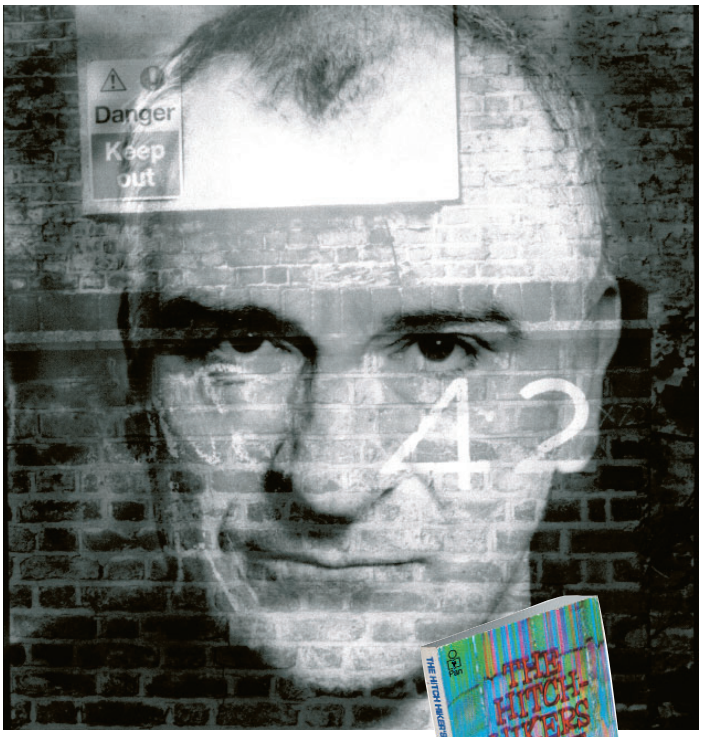
Intergalactic satire

The author became a household name when the quirky cult sci-fi novel was turned into a television series. *HHGG*, published in 1979 after a successful BBC radio series, was a satirical adventure about a group of intergalactic travellers.

It opens with the Earth being destroyed to make way for an intergalactic superhighway. It sold more than 14 million copies worldwide.

It was followed by the sequels *The Restaurant at the End of the Universe*, *Life, the Universe and Everything*, *So Long, and Thanks For All the Fish*, and *Mostly Harmless*

At the time of his death Adams was working on "the 137th rewrite of The Hitchhiker's Guide to the Galaxy movie screenplay, an all new novel, and a new secret project".



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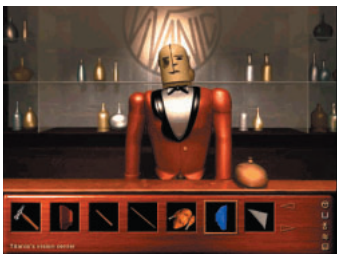


Starship Titanic
Macworld Games Room editor Peter Cohen on Adams' Starship Titanic: "The game exhibits all the trademark wit and bizarre, surreal situations you'd expect from any Adams opus, with fantastically detailed surroundings created by Oscar-winning designers. There's also a great cast of characters, including a deranged parrot voiced by Monty Python's Terry Jones. The game is beautiful to look at, fun to play, entertaining, and promises dozens of hours of challenge as you unfold all of the game's mysteries."

Mostly harmless

"He brought wit to science fiction. His ability to connect cosmic ideas with the banal commonplaces of everyday life was unique," Fry said after his friend's early death.

"Over the past 10 years he concentrated less on writing and more on bridging the cultures of science and the arts in lectures and broadcasts all over the planet. He spread the word of the Internet years before anyone outside universities and the American defence dept had ever heard of it," Fry added.

"He never had the aggression or single-minded ambition to profit from the dotcom boom, which he regarded with tolerant scepticism," said Fry. "His Internet was much more than a flash travel agency or dating service, it was a chance to change the way people thought and advanced."

In *HHGG*, the planet is described as "mostly harmless". Fry said that Adams had once suggested these words as his epitaph. Now Fry suggests instead the words of Steve Jobs, Apple CEO: "Insanely great".

Biological guru and author of *The Selfish Gene* Richard Dawkins said: "I have seldom met a more congenial spirit. And in modern electronic technology, he was a real expert. Science has lost a friend, literature has lost a luminary, Apple Computer has lost its most eloquent apologist. And I have lost an irreplaceable intellectual companion and one of the funniest men I ever met," Dawkins concluded.

Read thousands of tributes (and leave your own) at **www.douglasadams.com**. **MW**

Douglas Noel Adams, 1952-2001

Macworld LAB TEST

MHz: myth or reality?

1GHz PowerPC in 'late 2001'

IBM's PowerPC development team aims to develop chips capable of hitting 1GHz late this year, aiming to reach 2GHz in 2002. Though this development still hangs on the coattails of Intel and AMD, it could offer significant speed advantages to Apple's computers.

Intel plans to reach 2GHz with its Pentium 4 in 2001's third quarter. However, many tests prove that despite the on-paper chip-speed-gap, the performance difference remains slight (see right).

IBM's newest PowerPC chip (code-named Sahara) will be announced later this year, sources say. It will be theoretically capable of 1GHz performance. Reports claim Motorola is set to ship a follow-up version of the current 7450 chip (code-named Apollo) later this year. This will also reach 1GHz, with 2GHz chips from Motorola promised in 2002.

Both IBM and Motorola will be implementing their own versions of advanced technologies (for example, IBM's Silicon-on-Insulator technology) to build these high-speed PowerPC chips.

Go to a Macworld Expo keynote speech, and you're bound to see a demo that shows a Mac blowing away its Wintel rivals. Apple execs run an Adobe Photoshop file on machines with the fastest available PowerPC and Pentium processors: the Mac sprints to the finish line first, and the Wintel PC staggers down the home stretch like a weekend jogger running a first marathon.

Apple's point is simple: megahertz numbers aren't everything. Chip architecture is just as important—that's what helps a PowerPC CPU outperform a faster Pentium chip. At January's Macworld Expo, a 733MHz Power Mac G4 finished a Photoshop test 33 per cent faster than a PC with a 1.5GHz Pentium 4 processor did.

Does Apple's example hold up in a real-world road race? We ran six Photoshop 6.0.1 operations on the fastest PowerPC and Pentium chips we could find: a 733MHz Power Mac G4 and a Gateway Performance 1500XL with a 1.5GHz Pentium 4 chip.

Going up against a P4 chip twice its speed, the G4 more than held its own. The Mac and the PC performed most of the tasks in about the same time, with the Mac the decisive winner in two tests.

How did a Mac with a 733MHz chip outperform a 1.5GHz machine? Credit AltiVec, the subprocessor built into a G4. It allows the chip to render graphics and perform calculations faster than an ordinary PowerPC CPU. Adobe designed Photoshop to take advantage of AltiVec; hence the Mac's speedy performance in Photoshop tests. (In April, Adobe announced an optimizing plug-in for the P4.)

But try other applications, and the speed advantage that the Mac enjoys over a Pentium PC quickly evaporates. Operations in Microsoft Office took longer on the G4 – more than three times as much time in one case. Only line-by-line scrolling tests in Word and Excel were faster on the Mac.

The MP3-encoding test is a perfect example of the G4's worst-case scenario. Since the Mac version of the MVP player and encoder hasn't been optimized for AltiVec, the G4 lags behind the PC version. (When running AltiVec-friendly SoundJam, the PowerPC edges out the Pentium.)

Architectural differences between the Mac and Windows platforms account for the PowerPC's lower Quake III frame rate. Most PCs have a sound card to take the load off the host CPU during game play; the extra processing demands on Apple Sound Manager sent the Mac's score even lower. With Sound Extension turned off, the PowerPC's scores improved.

It's not just marketing spin when Apple says processor speed isn't the only way to determine whether a computer will zip through a task. But if the other factors involved don't favour the Mac, performance will lag behind that of a Pentium machine, megahertz gap or no. MW

Jeffy Milstead & Philip Michaels

More than just megahertz? Macworld Lab's real-world performance tests

Best results in test.

Shorter bars are better (except in Quake III tests, when longer is better

Photoshop 6.0.1 (results in seconds)

	Gaussian Blur 10	Unsharp Mask 2.3	Resize 50%	RGB to CMYK	Rotate 0.3 degrees	Lighting Effects	Total time
Power Mac G4/733	5	6	2	14	9	6	42
1.5GHz Pentium 4 PC	7	4	3	23	12	6	55

	Microsoft Word 9 (results in seconds)			**Microsoft Excel 9** (results in seconds)		**MVP 1.2** (seconds)	**Quake III** (fps)
	Document scroll	Search & Replace	Auto-summarize	Recalc	Document scroll	MP3 encode	Time demo
Power Mac G4/733	17	49	29	36	11	276	82
1.5GHz Pentium 4 PC	51	40	8	22	38	188	126

Card makers in power play

The Macintosh platform's largest upgrade-card manufacturers have stepped up their efforts to double the Mac's processing power. Sonnet Technologies and XLR8 are now shipping dual-processor upgrade cards, while PowerLogix continues to develop its own. The upgrades are designed to take advantage of the multiprocessing support in Mac OS X.

Sonnet was the first to market, with its Encore/ST G4 Duet card. This £680 card features two 500MHz G4 processors, each with its own 1MB of backside cache. Duet works with Power Mac G4s with AGP graphics. It replaces the original processor daughtercard in the Mac, and requires no software. It's also compatible with Mac OS X.

Sonnet is also looking to develop multiprocessor upgrades for older Macs.

Sonnet sales joy

Sonnet is planning OS X-supporting multiprocessor products for earlier Zero Insertion Force (ZIF)-based Macs (such as blue-&-white G3 machines) and PCI Macs such as the Power Mac 8500 and 9500 series. While Sonnet plans to expand its multiprocessor efforts, XLR8 is already shipping the first of its ambitious multiprocessor upgrade product line. XLR8 has based its latest upgrade cards on both ZIF-processor packaging and the company's Carrier ZIF product, to allow for upgrades in a wide variety of PCI Macs. XLR8 has adopted a modular approach for using ZIFs to upgrade Macs. The company began labelling its ZIF upgrades last summer as multiprocessor-enabled (MPe). Extra connections increase production costs, so no ZIF packages other than XLR8's have adopted this.

Once XLR8 had its G4 ZIF cards enabled to serve as multiprocessors, the company had to find a way to put two CPUs in a single processor-slot or ZIF socket. XLR8 came up with two methods – each for a different family of Macs.

For PCI Macs, such as the 8500 and 9500, XLR8 created the Carrier ZIF MPe (£115). This approach attaches to the company's MACh Carrier G4 MPe upgrade card, which has one ZIF socket and one Light Insertion Force (LIF) socket. LIF is similar to a ZIF, but with no lever. You choose what speed the G4 in the LIF socket is. You can choose to buy another G4 for the ZIF socket, or buy the card with the ZIF socket empty.

For ZIF-based Macs like beige G3s, blue-&-white G3s, and early non-AGP G4s, XLR8 offers the MACh Velocity G4 MPe upgrade card. This card works much like the MACh Carrier G4 MPe – it has LIF and ZIF sockets, and you choose how to populate them. What's the difference? You don't need a Carrier ZIF MPe, but do need the proper-speed MACh Velocity G4 MPe. For instance, owners of beige G3s need the MACh Velocity G4 MPe 66, for this Mac's 66MHz bus. Blue-&-white G3s and non-AGP G4s with 100MHz busses need the MACh Velocity G4 MPe 100. ZIF processors can be added to any empty slot in XLR8's MPe carriers – a key selling point. It means old processors can be kept, or replaced by an XLR8 G4 MPe ZIF upgrade, and then put into a multiprocessor upgrade.

The company is selling double-G4 processor upgrades, utilizing the new technology for both 100MHz and 66MHz bus speeds. A pair of 400MHz G4s costs £845, a dual-450MHz upgrade costs £925, and the twin-set G4 500MHz MACh Velocity G4 Mpe costs £1,169.

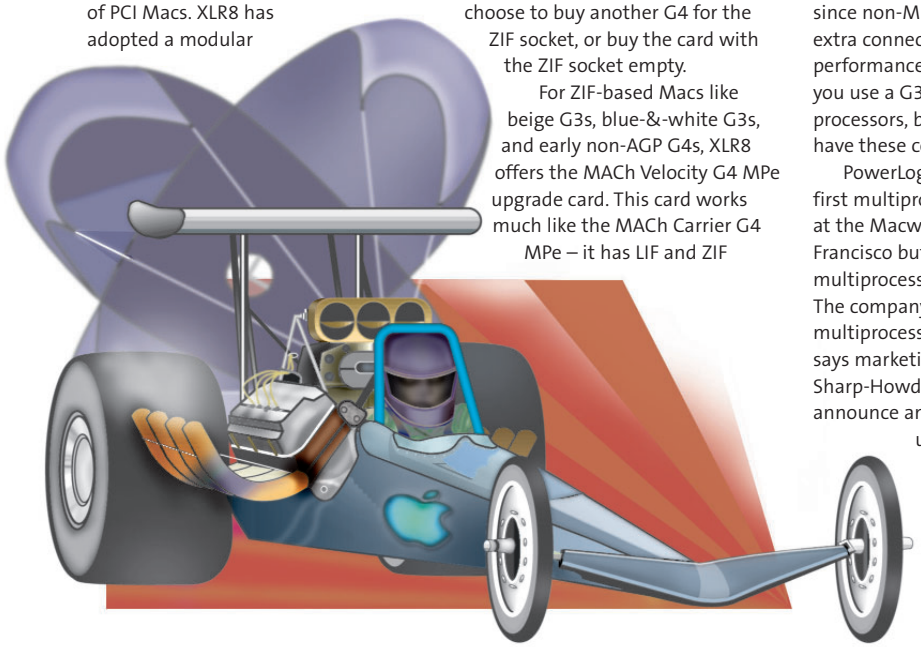
There are drawbacks when using a G3 processor on a non-MP-enabled G4 in XLR8's multiprocessor upgrades. XLR8's director of engineering Chris Cooksey said: "Use a G3 processor in the empty ZIF socket and you'll lose the G4's AltiVec capabilities that came with the multiprocessor upgrade.

Performance boost

"If you use a non-MP-enabled G4, you'll get AltiVec – the subprocessor technology that speeds up certain applications. But you may also experience slower performance, since non-MP-enabled G4s lack the extra connections needed for superior performance. That also happens if you use a G3 and G4 as your two processors, because the G3 doesn't have these connectors."

PowerLogix demonstrated its first multiprocessor design back at the Macworld Expo 2000 in San Francisco but hasn't shipped any multiprocessor upgrades since. The company is still working on multiprocessor upgrade cards, says marketing director Robin Sharp-Howdershelt: "We will announce an MP ZIF processor upgrade and a dual-processor upgrade for AGP Macs. However, there will be no MP PCI upgrade, because this will be too pricey." **MW**

David Read



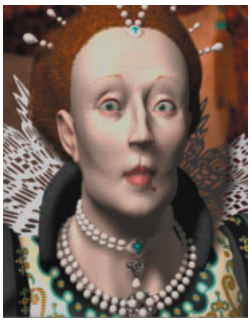
iMac double-memory deal

Apple has launched a special double-your-memory promotion for buyers of new iMacs. The memory give-away is available from participating dealers only. These include most AppleCentres, the Online Apple Store and most major resellers, who will double the iMacs' standard installed RAM. Apple is footing the bill.

iMac 400MHz and 500MHz models – which ship with 64MB of RAM installed – as well as older iMacs still in the retail channels – iMac 350MHz, DV and DV Plus – will all be upgraded at point of sale with an extra 64MB of free RAM. iMac 600MHz SEs, as well as older end-of-line iMac DV SEs, get 128MB of extra RAM.

Apple recommends a minimum 128MB of RAM to run OS X in Classic mode. Confirm that your dealer is supporting this promotion before purchasing your iMac.

E3: Civ III for Mac confirmed



During E3, the video-game industry's largest trade show (held at the Los Angeles Convention Center, May 17-19), Infogrames' MacSoft division announced that it will ship the long-awaited Civilization III for Mac.

Calling Civilization "a standard against which all other strategy games are judged," MacSoft marketing manager Cindy Swanson said her company is enthusiastic to be publishing the game, and is expecting an equally avid response from Mac players.

The game is the latest title to be designed by the legendary Sid Meier. Civilization titles have sold a total of more than four million units to date, a terrifically impressive number by any measure. MacSoft has previously scored success with the Macintosh conversion of Civilization II, released in 1996.

A rival successor to Civilization II was released by Activision last year. Civilization: Call to Power (reviewed, *Macworld,* March 2000) was not developed by Sid Meier's Firaxis company, and was generally received with indifferent reviews. Civ III, on the other hand, is reported to stick a lot closer to Civ II's gameplay, while expanding its reach and enhancing the arena of combat.

New Wonders of the world include: The Great Canal, which links oceans; and The Internet, which promises to boost national science output.

A new Culture rating (alongside military strength and technological discoveries) helps players get positive outcomes in diplomatic negotiations, expands borders, and faster assimilates conquered cities.

Also in Civ III, barbarians have their own cities, which "respawn" in an uncharted area of the map when you destroy them.

Civilization III is an empire-building strategy game. Players get the opportunity to take on some of history's greatest leaders as they try to build a civilization themselves. Some elements from previous Civilization games have remained the same, but the new title sports a new graphics engine that will provide better looking maps, animation and graphics. An improved interface and new reporting screens will help acclimatize novice players, and provide useful info for experienced Civilization fans.

The title sports customization tools and enhanced combat, trade and diplomacy features, as well.

MacSoft hasn't yet offered a firm release date for the game. **MW**

City at bottom of table

The City screen is now on the map. Firaxis's Jeff Briggs says that Civ III keeps more info on the map, and so reduces pop-ups: "We're working to make it a seamless, continuous experience".

C'mon, feel the GeForce3

Nvidia's GeForce3 graphics chip is now available through the online Apple Store for £359 (ex. VAT). The GeForce3 graphics processor (see *Macworld,* March 2001) holds over 57 million transistors, and can perform more than 800 billion operations per second.

Apple notes that the card "is designed only for Power Mac G4 systems with the new 4X AGP card slot (introduced in January 2001)."

The card will render 3D scenes in real time, carries 64MB of dedicated graphics processing RAM and has a 230MHz 128-bit memory controller. In tests, GeForce3 shows its prowess – Quake III runs at 71fps on it, against 35fps on the GeForce2 MX. When he announced the card at Macworld Expo Tokyo, Apple CEO Steve Jobs called GeForce3 "the most exciting thing in years". **MW**

Apple pits Mac OS X against Microsoft's Xbox at E3

Despite Microsoft's determination to steal the show to promote its X-box games console, Apple took a booth at the Electronic Entertainment Expo (E3) last month to showcase games running on Mac OS X (v10.0.3).

Apple set up a dozen Power Mac G4s equipped with dual-533 MHz processors. The Macs had 512MB of RAM and a fresh batch of Apple-made GeForce3 cards driving 15-inch Studio Displays. In an interesting concession to gamers, each Mac was equipped with multi-button USB mice manufactured by Logitech, rather than the Apple Pro Mouse.

Running at 1,024-x-768 resolution and 32-bit colour depth, the Macs returned stable frame rates of 60 fps or above in enclosed areas of a never-seen-before beta build of Quake 3 Team Arena. **MW**

Peter Cohen

Slump dampens stores launch

A month of notable announcements for Apple received a mixed reaction – with consumers and analysts welcoming the company's new products and strategies, but the financial community reserving judgement. Despite the successful launch of its retail stores (see pages 18-19) and continued enthusiasm for its titanium PowerBook G4 and revised iBook range, Apple's share value fell by $4.80 during May. However, Apple remained a favourite with institutional investors, with 69 per cent of trades in May coming from that group.

Initial market optimism for the iBook saw Apple stock climb 50 cents per share, but this was tempered by continued uncertainty over the short-term future of the PC industry. As *Macworld* went to press, IT giant Sun Microsystems had issued its own warning, which had impact across the industry. The company warned of sales of $3.8 billion in its first quarter. Analysts had expected $4.42 billion in sales.

The market message boards are praising Apple for accelerating its product release schedule – with its hardware announcements staggered throughout the year, rather than being concentrated at the US Macworld Expo events. Others cite the increasing strength of Linux in the corporate markets, the perceived weakness of Windows, and the underlying Unix-based networking strengths of Mac OS X. These factors could offer significant opportunity for Apple in the future, they claim.

Analysts AG Edwards upgraded Apple stock to a "Buy", following news that the company was opening a chain of retail outlets on May 7. A spokesman for the brokerage said: "The stores will be about brand equity. If you're going to go after consumers, you need to raise awareness and generate excitement."

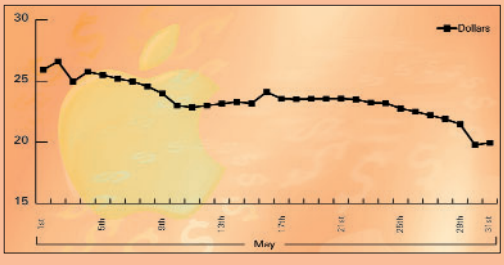
Lehman Brothers analyst Dan Niles agreed, saying the company will attract new customers with the move. Niles is positive in his outlook for the company, predicting a near-term dollar-value target of $29 – well in excess of consensus near-term estimates of $23. Apple stock climbed almost a dollar in response to these predictions.

However, Salomon Smith Barney analyst Richard Gardner warned that Apple may face inventory problems, as new users try to purchase OS X-installed Macs in preference to OS 9.1 machines. Apple has moved to head-off such as situation, with its OS X on-demand strategy (see page 3). Gardner rates Apple stock as "Neutral". "We would not be aggressive buyers of Apple shares in the mid-$20 range, due to the company's channel inventory-management challenges and continued consumer demand weakness worldwide," said Gardner.

Good news for Apple came from Merril Lynch's mid-May report. The analysts predicted a significant cut in the rate of growth for the industry, but forecast a strong 2002. Research firm IDC predicts a 4.1 per cent year-on-year rise in unit sales of PCs in the current quarter. Analyst Steve Fortuna said: "We feel next year could be surprisingly strong."

Wall Street remains as pragmatic as ever. "I'd love to have a recovery in hand, but I don't think it is yet," said Tom Sparico, managing director of equities at broker Bengal Partners. "It's just too soon. We have to digest this slowdown process first. Ultimately, it will lay the groundwork for a very robust recovery." **MW**

Jonny Evans



Business briefs

- **Ricoh UK increased its UK market share by 7.6 per cent during 1999-2000. Xerox climbed 3.1 per cent, while Canon fell by 11.1 per cent. Figures come from market analysts, Inforsource.**
- **Former CEO of Belgian software vendor Lernout & Hauspie, Gaston Bastiaens, has been arrested in the US and is awaiting extradition to Belgium on charges of stock-price manipulation and false accounting.**
- **Palm's market capitalization fell last month, following a profit warning announcement. Palm has cancelled its merger with Extended Systems, and is expecting fourth-quarter operating losses between $170-190 million.**
- **HP posted revenues of $11.6 billion for the quarter ended April 30. This total compares to $12 billion in revenue for the same period last year. HP saw its revenue slide 7 per cent year-over-year in the US markets. Its marketshare in Europe dropped 5 per cent.**
- **Roxio has completed its separation from parent company Adaptec, to focus on software development. Its shares stood at $11 as press time.**
- **Tomb Raider creator Eidos is to offer existing shareholders new shares at below present market value in a bid to raise $70 million.**
- **Adobe Systems will shut down operations in the US and Canada for the week of July 4 to help control expenses.**

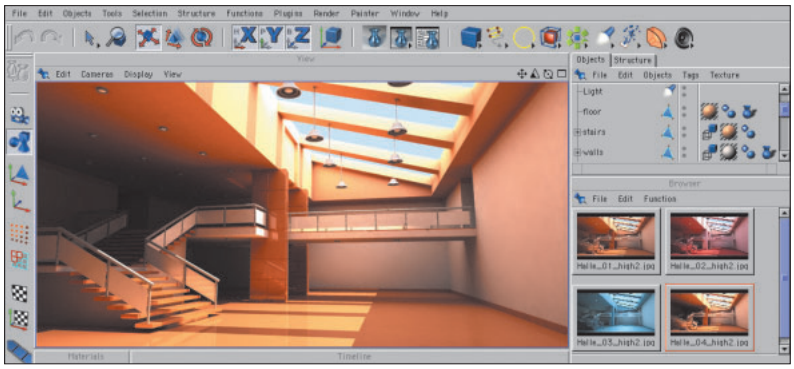
Viao SuperDrive

Pioneer is shipping its DVR-103 to Sony for use in its Vaio notebook, sources claim. Sony is the fourth manufacturer to take the product, after Apple, Compaq and NEC/Packard Bell. Apple calls the DVR-103 the SuperDrive. It offers both DVD-R and CD-RW capabilities and is bundled with the 733MHz Power Macs.

The device is also available as the DVR-A03 for use by third-party systems integrators and peripheral makers such as LaCie. This external unit retails for $995.

To meet rising demand, Pioneer is expanding significantly its production capacity in China, opening two new plants there this autumn. The company plans to produce over one million DVD-R/CD-RW drives there before the end of the fiscal year.

For the fiscal year ending March 2002, Pioneer expects its group net-profit to climb 15 per cent to 21 billion yen, and group revenues to rise 11 per cent to 720 billion yen. The company expects sales of core electronics products, such as DVD players and recorders, plasma-display panels and car electronics, to continue growing steadily. MW



Controlled explosion
Cinema 4D XL version 7's ExplosionFX tool can explode objects into 3D elements, rather than flat polygons – both blast direction and blast strength are controllable. Material settings of the application have also been improved to support blurry reflections and transparencies. Artists can adjust parameters, including lighting effects, within an image-processing application without needing to re-render.

3D authoring ready for OS X

Maxon Computer is shipping Cinema 4D XL version 7 and BodyPaint 3D for Mac OS X. The company has made upgrades for both apps available from **www.maxon.net**.

Features of version 7 include new rendering effects – such as radiosity and caustics – which calculate light reflections of reflective or transparent surfaces. Multipass rendering support has also been enhanced. Information calculated by the application will be written into the image layers. Cinema 4D XL 7 also features improved Polygon Reduction tools – built to help create games and scenery.

100 pre set Shaders called Smells Like Almonds 2.5 are also built in, and can create special effects, such as X-Rays.

Maxon's Cinema 4D Net, the network-rendering application, comes as standard. A three-client licence of this is bundled with each version of 4D XL 7, so that animations can be rendered over networks using PCs or Macs, and the rendering can be administrated within a Web browser.

BodyPaint 3D is an image-creation and -manipulation tool built to integrate with Cinema 4D. Maxon calls it "the ultimate texturing tool for every 3D artist, no matter what modeller is used".

Maxon has no plans to surcharge customers migrating to Apple's next generation OS. Owners of a Mac OS 9 version of either application will be entitled to a free upgrade to the Mac OS X-native versions. Maxon Cinema 4D XL 7 costs £1,188. BodyPaint 3D costs £408. Demos of both products will be available from Maxon. Anyone who purchased Cinema 4D XL version 6 between March 22 and June 2001 should automatically receive a free upgrade to version 7.

HiSoft, 01825 718 181

Visor's price cut

Handspring has reduced the price of its Visor Deluxe handheld computer from £179 to £199. The Visor Deluxe comes with 8MB of RAM, allowing you to store up to 12,000 addresses. It comes in five colours: ice, graphite, blue, orange, and green. Every Visor Deluxe also comes with a black-leather case.

Handspring, 020 7309 0134

JVC's mini DVP cam

JVC has announced the Miniature GR-DVP3/DVP1, which it claims is the world's smallest digital-video camcorder. The pocket-sized camera uses MiniDV-standard tape and an SD Multimedia card to capture still-images and MP3s.

It integrates a digital still-camera function, the ability to email video clips in MPEG4 format, and has MP3 sound effects built-in. It also offers 10x optical and 100x digital zoom, as well as playback controls. The camera powers up and down when the viewfinder or the two-inch high-resolution LCD monitor are opened or closed.

The colour bandwidth is almost three times that of analogue video, according to JVC, and the video camera boasts a CD-quality sound-recording system in either two-channel, 16-bit sound at 48KHz; or four-channel, 12-bit sound at 32KHz. The camera is equipped with both USB and DV (FireWire) terminals.

Bundled Mac software includes Presto! Mr Photo and Presto! Photo Album. The camera is available in dark grey and silver, or silver finished models. The DV-out model costs £1,100, while DV-in and -out version is £1,300. The product should ship by early August.

JVC, 020 8208 7654

Crystal clear projection

Canon has introduced the LV-7105 LCD multimedia projector. It weighs 2.8kg, and has a resolution of 1,024-x-768 pixels. It features digital keystone-correction and will accept S-Video signals, as well as those from DVD players and games consoles. The £2,999 projector will work only with Macs that have a VGA or video-mirroring port – such as PowerBooks, iBooks, iMacs and G4s. It needs a £35 Mac adaptor.

Canon, 01737 220 406

Absent downloads

Ilesa's Download Deputy version 4.5.3 allows downloads to be queued and scheduled to occur during downtime, by dragging the link from a browser to the utility. If the site is busy, the utility tries again later. It can automatically expand downloads, disconnect the PPP connection, or shut the Mac down. Version 4.5.3 features Proxy/Firewall support, an improved scheduler and is more stable than before. It costs $30.

Ilesa, www.ilesa.com

Seiko pads out Palms

Seiko has launched its Smartpad 2e. This £169 A4-sized portfolio case opens up to reveal a Palm on the left side and an A5 pad of paper on the right. The device includes a Smartpad pen, which communicates with the Palm via infrared using a tablet under the notepad. Under the pad is a virtual keypad for inputting data direct to a Palm.

Seiko UK, 01628 770 001

Medicines sans Frontiers

UltraLingua has released a pair of language dictionaries – French-English medical terms and French-Spanish. The $29 French-Spanish translating dictionary includes over 250,000 indexed terms and a reverse translation system. The $49 French-English Medical Dictionary includes over 60,000 indexed medical and life-science entries.

UltraLingua, www.ultralingua.com

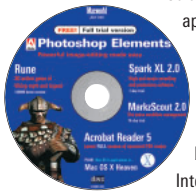
continues page 40

Apple updates

Apple has released a number of International-English updates in recent weeks. These include the **AppleWorks 6.1.2** update for customers with AppleWorks 6.1. Apple has also released the **iTunes Visual Plug-ins Software Development Kit** (SDK), which contains documentation and sample coding files that will enable developers to create visuals for iTunes 1.1 or later. **iMovie 2.0.3** has also been posted. The company has also released **Multiple Users 1.4 for OS 9**. This fixes some bugs and offers enhanced security and file handling. Apple does not permit third parties, such as *Macworld*, to carry System updates. All the above updates can be found at www.macworld..co.uk/updates.

Third-party updates

UltraDev and Dreamweaver 4.01
These updates significantly speed the performance of Macromedia's Web-authoring applications.



DoubleTalk 1.0
This prevents out of memory errors, improves the built-in Help and International language support and fixes minor bugs in Connectix's cross-platform communication application.

Toast Titanium 5.0.1
This update adds compatibility with iTunes and Disk Burner, support for built-in CD-RW-drive copying, and fixes some minor issues with the Apple Super Drive for Roxio's award-winning CD-authoring application.

BBEdit 6.1.2 updater
BBEdit 6.1.2 improves compatibility with a variety of FTP servers, improves its performance under Mac OS X, and adds support for previewing HTML documents in OmniWeb browsers.

Rebound! 2.0.3
This file contains an installer for Rebound! version 2.0.3 software, including the logging system, online help, documentation and optional utilities in PDF form.

Iomegaware 3.0
This offers the latest support for Zip, Jaz, and PocketZip products.

continues page 43

Husky voiced

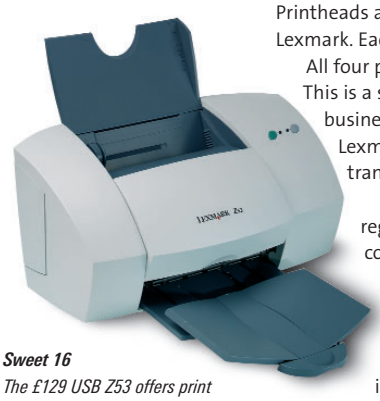
Momentum is a new collection from PhotoDisc, part of Getty Images. This collection has been assembled to reflect the energy and movement involved in four areas of life: expressing, working, designing and playing. It consists of 500 images, which can be previewed online at www.photodisc.com. A printed book containing the images is also available. Pricing depends on use and print run.
Getty Images, 0845 302 1212

Inkjet roll-out

Lexmark has released four inkjet printers – the Z13, Z33, Z43 and Z53 ColorJets. All feature Lexmark's colour printhead technology and have a resolution of up to 2,400-x-1,200dpi – except the Z13, which offers a resolution of 1,200-x-1,200dpi. Printheads are integrated into the ink cartridge to keep print quality robust, according to Lexmark. Each printhead has 192 nozzles, which produce 2.88 million ink drops per page.

All four printers feature a Lexmark-developed paper-feeding system called Accu-Feed. This is a stripped down version of the system developed by the company for use in its business-class printers, which virtually eliminates paper jams and misfeeds, claims Lexmark. The system supports a range of print media, including envelopes, transparencies, labels and iron-on transfers.

All the printers are covered by an on-site exchange warranty. They also offer regionally defined colour tables, reflecting Lexmark's own research that shows colour preferences vary by geographical location. Peer-to-peer networking is also supported in some models.



Sweet 16
The £129 USB Z53 offers print speeds of 16 pages per minute (ppm) in black and 8ppm in colour. It also offers double-sided and multi-page printing (up to 16 reproductions per A4 page).

The Z43 offers USB connectivity at up to 12ppm in black, or 6ppm in colour. It ships with Lexmark's Print Gallery CD, which contains over 100 high-definition images from some of the most famous artists and museums in the world. This printer costs £84.

The £67 Z33 reaches print speeds of 9ppm in black and 5ppm in colour and uses exclusively licensed pigmented black ink to deliver laser-quality sharpness. The ink is also waterproof and won't smear.

Finally, Lexmark's USB Z13 ColorJet printer is an entry-level printer with a resolution of 1,200-x-1,200dpi at print speeds of 7ppm in black and 4ppm in colour. It costs £50.

Lexmark, 01628 481 500

NEC's eco MTs

NEC has released its MT 850 and 1050 series projectors.The MT 850 has an SVGA (super video graphics array) resolution of 800-x-600 pixels and a brightness of 1,700 ANSI lumens, the MT 1050 offers a brightness of 2,100 ANSI lumens and an XGA (extended graphics array) resolution of 1,024-x-768 pixels.

The projectors will cast images from a CompactFlash card. An energy-saving Eco-mode is built-in, as is the company's proprietary AccuBlend solution, developed to enhance image quality.

Tools include an integrated laser-pointer, an on-screen cursor, point-&-drag electronic zooming, a USB-mouse controlled chalk board, and full remote controls. Keystone correction is built-in.

Available now, the MT 850 costs £3,050; the MT 1050, £4,650.
NEC, 0208 993 8111

C-1 transport
The C-1 supports USB for transferring images to the Mac, and ships with Camedia Master software.

C-1 mounts on Macs

Olympus is introducing the Camedia C-1, a 1.3-megapixel digital camera. The £249 camera's dimensions are 110-x-62-x-34cm. It has a 35mm lens and through-the-lens autofocus, which ensures sharp images, according to Olympus. An ESP-metering system takes readings from various points, to determine optimum exposure settings. It also has a 2x digital-zoom.

The digital camera – which can be used with Camedia printers – stores pictures on a 64MB SmartMedia card.

Olympus, 0800 072 0070

LCD price war hots up

The long-expected LCD price war has begun, with NEC-Mitsubishi following Apple in announcing a series of hefty price cuts across its LCD range.

Tom Martin, director of IBM's flat panel monitor programme, predicted significant price drops in the LCD-monitor market this year, during the Stanford Resources Flat Information Displays conference last year.

NEC-Mitsubishi has cut prices across the range. Its 15-inch entry level LCD1530V drops to £368 from £549. Its multimedia 15-inch – the 1525M – falls to £449 from £589, while its 1525X drops by £120 to £559.

NEC-Mitsubishi has also released its LCD1700M+ 17-inch multimedia monitor. This £799 compact monitor measures 422-x-451-x-208mm. The company recommends the monitor runs at a resolution of 1,280-x-1,024 pixels at a frequency ratio of 60Hz.

Also new from the company comes the LCD1850DX, which offers six-colour controls (red, green, blue, yellow, magenta and cyan). It's an 18.1-inch monitor with a horizontal and vertical viewing-angle of 17-degrees. The monitor can be rotated up to 90-degrees to offer portrait format viewing. It can also be separated from the stand for different applications. The 1850DX offers two DVI-I interfaces. Maximum resolution is 1,280-x-1,024 pixels at a refresh rate of 60Hz. It ships with a three-year warranty and, costs £1,649.

NEC-Mitsubishi has sliced £400 from the price of its sRGB-equipped 18-inch monitor, the LCD1830. This now costs £899. These monitors will require a Macintosh adaptor for Macs with no SVGA port.

NEC-Mitsubishi, 0870 1201 160

Multimedia mogul
The LCD1700M+ 17-inch multimedia monitor (above) offers a wide 160-degree viewing angle with an active display of 33.8-x-27.3cm. The monitor ships with a three-year warranty.

See page 83 for Macworld's test results.

Mobile projector ships

Mitsubishi Electric has released its £4,500 LVP-X390U portable display projector.

The projector weighs 6.7kg and measures 299-x-133-x-367mm. It hosts a 2W stereo output, and supports up to 16 million colours at an XGA (Extended Graphics Array) image resolution of 1,024-x-768 pixels. The LVP-X390U offers a 400:1 contrast ratio, and has a brightness of 2,200 ANSI lumens.

It also includes digital keystone-correction of up to 15 degrees. The projector offers a point-&-zoom function that magnifies any part of the picture for sharper viewing. It also offers a picture-in-picture (PiP) feature, so two images from different sources can be shown together on the same projection. The digital zoom will expand any part of the image to fill the screen, retaining the original image as a PiP.

The projector supports PAL, SECAM, NTSC, component DVD and HDTV.

Mitsubishi Electric, 01707 278 684

Natural colour
The LVP-X390U features Mitsubishi's Natural Colour Matrix, which controls six colour-signals.

Motion video
MyVideo captures and outputs video to analogue monitors. It comes with composite-video audio cables.

Video captured in QuickTime

MyVideo is a USB-based video-capture and -output solution from Eskape Labs. It will capture motion JPEG movies from any analogue-video source to digitally edit on a Mac, and for later output to any analogue VCR or monitor. It will capture QuickTime movies from S-Video or Composite video sources, and will capture and playback at full speed (PAL 25fps; NTSC 30fps).

MyVideo is compatible with iMac, iBook, PowerBook, blue-&-white G3 Power Macs and all G4 Power Macs. It handles audio too, and ships with a selection of desktop-video software and Eskape TVs own video-capture software. It costs £170.

Hauppauge, 020 7378 1997

Extension tracker

Extension Overload version 5.8 is a 4,580-item database detailing extensions, Control Panels, Control Strip modules and Contextual Menu items in Mac operating systems 7 to 9.1. It will enable and disable extensions. The utility contains a searchable database of system-error codes, and generates reports to help users track extensions and Control Panels. Registration costs $20. The demo is free to use for a two-week evaluation period.

Extension Overload, www.ExtensionOverload.com

Belkin fires off hub

Belkin has launched the six-port FireWire hub. The cross-platform peripheral adds six FireWire ports to any FireWire-equipped computer. It can be used alone, or docked with other hubs and costs £68. The hub is covered by a lifetime warranty.

Belkin, 01604 678 300

Video-CD player updated

VCD Player version 1.4.8 plays video-CDs on Macs with full-screen MPEG playback. It features configurable options to control sound and playback, and tracks are selectable, like a conventional audio CD player. It supports multiple monitors. The unregistered version plays for five minutes at a time. Registration is $10.

Jonny Lee, www.jonnylee.com

DiskLock security fillip

DiskLock 4.6.5 supports Mac operating systems up to and including OS 9.1. It offers high-level security for data on a Mac, using encryption technology rather than a password key. DiskLock can instantly lock data to protect it from prying eyes. It supports multiple-user profiles, offering different levels of access – an administration package is also available. Folders can be protected with a single click by DiskLock, which loads before the system software. It costs £69.

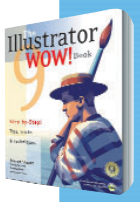
Computers Unlimited, 020 8358 5858

continues page 44

CDs & books

Illustrator book Wows

Peachpit Press has updated its Illustrator 9 Wow! Book. It's designed to help beginners and advanced users in the use of Adobe's vector-design tool. It includes step-by-step instructions, examples of work, and a CD-ROM containing brushes, demos and other Illustrator add-ons. The book costs £37.99.



Pearson Education, 020 7447 2000

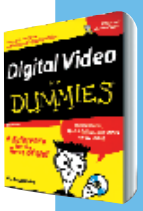
Maths education boon

Sherston has released Display It Yourself Numeracy and Hide and Reveal Random numbers. The educational CD-ROMs explain mathematical concepts, and develop logical thinking. They cost £31 each, and have a full screen mode.

Sherston Software, 01666 843 200

Dummed-down video

IDG has released Digital Video for Dummies, its guide for novice filmmakers. It details camcorder choice, software, planning, shooting and mixing. The title ships with a free CD-ROM, and costs £19.99. IDG titles are available at up to 30 per cent off direct from Macworlds' reader offers department. www.macworld.co.uk/readeroffers.



Macworld, 020 7831 9252

Biological imperative

Rickitt Educational Media has introduced three interactive-learning titles for secondary schools biology. The £49 titles are: Biomes; Flowering Plants; and Non-Flowering Plants. The company has also released nine new chemistry titles – including Atomic Structure and Properties of Acids, Bases and Salts. The chemistry titles start at £79. The tutorials are designed to complement commonly used science text books.

REM, 01458 254 700

Epson printers large it up

Quick times
Epson's 10000CF (right) uses a Photo Accelerator module, which the company claims will make printing up to 2.5 times quicker.

Epson has launched its Stylus Pro 10000 and the Stylus Pro 10000CF wide-format printers. Each uses a different ink – QuickDry Dye-based ink, which dries "in 10 milliseconds, and ColorFast Pigment-based ink, which "last 100 years", respectively. Both six-colour printers support A3 to BO+ (40-x-94 inch) sized media. They have a resolution of 1,440dpi, and a speed of 20 square metres per hour.

A new Micro Piezo print head features 180 nozzles for each colour, to improve print speed and control over dot size, shape and placement. Data transmission has also been speeded up. The Auto Print Head Optimization System will identify blocked nozzles four seconds before a print instruction is executed.

The Stylus Pro 10000 hosts a number of enhancements for the computer assisted design (CAD) markets. Additionally, an Epson Stylus RIP Designer XL is available to improve images. The USB Stylus Pro 10000 costs £7,495, while the 10000CF costs £7,995.

Epson, 0800 220 546

Scanners aid Expression

Clearly read
The Expression 1680 Pro ships with a transparency unit.

Epson's new 48-bit Expression 1680 and 1680 Pro scanners both offer an output of 1,600-x-3,200dpi, and can recognize 280 trillion colours. The 1680 can scan an 8.5-x-11-inch photo in less than 23 seconds at 300dpi, Epson claims. It will scan a 35mm slide at 1,600dpi in "less than 65 seconds".

The scanners offer USB, FireWire and SCSI connectivity. The bundled software includes Adobe Photoshop LE, Epson Twain Pro 2, Xerox Textbridge Classic, Presto! and Scan Server software. The 1680 costs £649 and the 1680 Pro is £859.

Epson, 0800 220 546

Grand Central Pro updated

Hermstedt will release Grand Central Pro 3.0 file-transfer software in August. Version 3.0 will be Carbonized for Mac OS X, and offer peer-to-peer data transfer using Internet Protocol (IP) through a choice of analogue, ISDN and xDSL line connections. Its Multi-Homing function offers more security settings for IP and ISDN file-transfer servers.

The Grand Central Pro file server keeps the connection for external file transfers separate from the internal ethernet. This minimizes the risk of unauthorized external access to the company's network.

Other features include encrypted transfer for high-data security, a Suspend and Resume function and group sending. Grand Central Pro 3.0 will cost £399. An upgrade from version 2.x to 3.0 will cost £99.

Hermstedt, 020 7242 4060

CarryOne on case

Lenticular Products has released the OneTouch and CarryOne CD storage devices. Inspired by Apple's range of colourful hardware, such as the iMac, the OneTouch CD-storage box is made of translucent plastic. It costs £22 (inc VAT) and will hold 60 CDs in three separate sections. CarryOne is a zip around polypropylene shell. Priced at £5, it stores either 24 CDs or holds a CD player and a few CDs.

Both products are available in Graphite, Tangerine, Lime, Grape, Pink and Blue. The CD sleeves are made from breathable, non-scratch, non-woven material.

Lenticular Products 01666 840 888

If Apple is to sell more-powerful machines, it needs more processor-intensive applications

Nutty processors

I have said this before, but it looks like computers are fast enough already – at least for the average person doing word processing and maybe some graphics. So what is next for Apple? Even an iBook can edit DV movies without skipping a beat.

Well, Apple needs to find more processor-intensive tasks for people to do. But if you can already do digital video, what else is there? We need to look to what people are doing at the high end to get a clue.

Just about the most taxing thing you can ask a computer to do is render 3D images, especially when making animations. I'm not talking about games rendering such as Quake or Tomb Raider. That stuff is rendered on the fly by video cards, which are getting faster and faster. I'm talking about animations that take a while to render, such as *Toy Story* or the new computer animated movie *Final Fantasy* (out this summer). This stuff isn't rendered live. It takes render farms weeks to get the amazing footage that makes a computer generated movie. So, perhaps the next time you upgrade your Mac, it'll be so you can render 3D graphics on your PowerBook.

You may be thinking that this stuff is totally pie in the sky, but a couple of things I've stumbled across have convinced me otherwise.

A few weeks ago, I saw a demo of Maya – the animation software from Alias|Wavefront that's coming to Mac OS X this summer. What I saw took my breath away.

Part of the demo involved a blue rectangle that could be viewed from any angle as the camera was spun around. It got more interesting when an electric fan was introduced to the scene. As the direction of the fan changed, it started to blow on the blue square. Rather than being inanimate, the rectangle represented a hanging sheet of blue silk. As the fan was pointed at the sheet, it billowed just like clothes on a washing line. The camera spun around to capture the movement from every angle. I had no idea such incredible things were possible – especially as this wasn't a rendered scene, every aspect was being calculated live. You could control the fan by moving the mouse, and you could spin around the scene while waving the fan around.

This is amazing, but it doesn't stop there. Was I watching the demo on a tricked-out SGI workstation with a dozen liquid-cooled processors? No. So it must have been a secret multiprocessor gigahertz Mac with a video card stolen from Area 51? Wrong again, it was on a PowerBook G4 – other than a stack of memory (I'm guessing), it was bog standard.

I saw similarly amazing stuff at a demo of LightWave 6.5, where creating rushing-water scenes or realistic smoke was just as amazing.

Before you all rush out and buy Maya or LightWave, you need to know that this demo was done by a professional. Mere mortals like us will need to learn some pretty complex things before we get to do that cool stuff. However, Maya is getting easier and easier to use. It has gone from an application that required some pretty hard-core programming and modelling skills, to one where sliders are now being introduced to save endless co-ordinate typing.

The fact of the matter is that you still won't learn Maya or LightWave in an afternoon. In fact they are so complex, it might take years. However, the technology is there, and it's getting easier to use. In five or ten years your kids might be using a descendant of Maya to make scenes for Barbie in their own soap opera, or decapitating Jar-Jar Binks in their own remake of *Star Wars*. The power is here already, so only the interface needs simplifying.

Artificial intelligence (AI) is still creeping along, but given ten years and practically unlimited computing power, who knows what might be possible. Given the ultra-realistic characters of the forthcoming *Final Fantasy* movie, you may not need to re-write *Star Wars*. Simply combine the realistic characters with convincing AI, and they will make their own movie. That should keep your iBook G6 warm.

This is one possible scenario for what might lurk on a future iBook. It might seem fantastic, but it really isn't far beyond our reach – we'll have problems distinguishing real and animated characters quite soon.

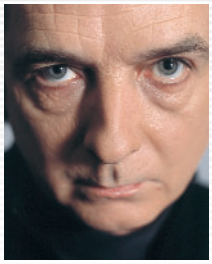
Of course, the driving force will be whatever people want to do with the new-found power of computers. If the past is anything to go by, the porn industry is likely to come up with the next killer application. But, it isn't impossible for the games industry to come up with something cool. I'm sure they can do better than Furbies.

I'd be interested to know what other applications you think might be used to soak up the glut of processing power. If you have any good ideas, let me know at **davidf@macworld.co.uk.** MW

"Simply combine realistic characters with convincing AI, and they'll make their own movie. That should keep your iBook G6 warm."

Michael Prochak

Spending money on vague adverts when money is tight is stupid



I don't understand

As the Counting Crows song says, we all want to be big, big stars, yeah... but we got different reasons for that. Out in our "everybody I know who is right always agrees with me" world, it's comforting to know that for the most part, no one bothers to question just what those reasons are. Well, at least not in public. And now that the media-fuelled angst and urgency of the election circus has reverted to more mundane and traditional grounds – such as fear, greed and vengeance – the blizzard of news, lies and thick advertising are gradually receding to their normal subliminal level of incomprehensible soporific background noise. But it's OK... bullshit makes the flowers grow, so it must be beautiful.

Speaking of advertising, somebody once said that they knew that half their advertising budget was wasted... the problem was, they didn't know which half. When it comes to advertising, or real life for that matter, essentially all statements are true in some sense. However, they're also false in some sense, meaningless in some sense, true and false in some sense, true and meaningless in some sense, false and meaningless in some sense, and true and false and meaningless in some sense. In the world of advertising, common sense is what tells you that the world is flat.

As you've probably noticed, Apple has just launched two new iBook TV commercials to accompany their existing back catalogue of iMac and titanium PowerBook adverts. As usual, Apple is sharply targeting the consumer/business/'is there anyone out there' market, and probably doing a splendid job of wasting both halves of its advertising budget. But strangely enough, on UK terrestrial television, there's been a rash of similarly vague advertisements for highly unlikely companies like EMC, Hewlett-Packard, Computer Associates (CA), and IBM. And apart from speculating which half of the advertising budget they're wasting, one does wonder why these companies – usually targeted fairly and squarely at the upper echelons of the IT industry, and specifically at the decision-makers – are advertising to the great unwashed public in general?

Traditionally, advertising on television involves specific consumer products. So, to the unilluminated, the move of the aforementioned companies into this mucky medium is breaking relatively new ground – particularly in the UK. So why, you may ask, are they doing it? Well, HP, rather like Apple, considers it has a very strong consumer channel – and is reportedly using this as the reason behind its current advertising. However, CA and EMC in particular don't really focus on the consumer market, and IBM's e-business advertisements are clearly aimed at large companies. So, the same reasoning can't possibly apply. What appears to be happening in all of these scenarios is that these huge corporations are trying to build their own Coca-Cola-style brand recognition in the market-place. All of these organizations have extensive marketing budgets, and it's often the case that in an economic downturn – which we're in, in case you haven't noticed – many big companies get desperate and spend even more. Although it's probably not a realistic expectation of any of the current crop of advertisers – CA, EMC, HP, or IBM – that this television marketing will result in a telephone call the following morning from the CEO or CTO of a large company requesting a visit from a salesperson or account manager, there is some vague hope that these messages – plus the perception that IT is a major contributing factor to profitability – will eventually up their turnover.

Unfortunately, according to a recent Butler Group survey, there is absolutely no correlation between IT spending and profits. And, despite the media-driven hype, technology has been hideously over-valued by companies involved in an IT "arms race" that has no direct relation to company profits.

According to the report, spending money on IT guarantees absolutely nothing, and the absence of a demonstrable relationship between profitability and IT spending should be seen as evidence that other influences – such as strategic advantages, competitive positioning and leadership's effects – are likely to be more decisive than information technologies.

One might construe from this information that if spending money on IT guarantees nothing, vague, undifferentiated advertising of IT companies on TV probably guarantees even less.

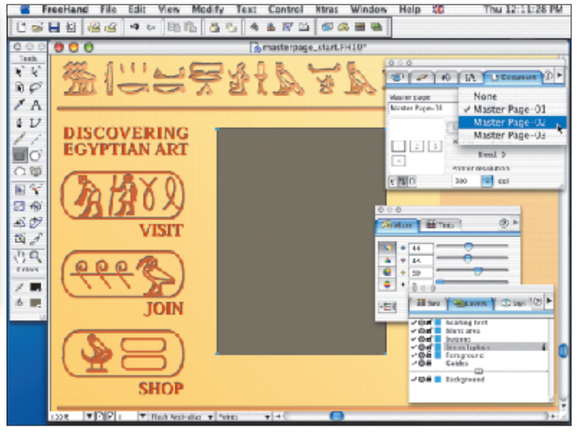
Like politicians, celebrities or pig farmers, even computer companies want to be big stars, and adverts do give them some semblance of an on-screen persona. Personally, I think some of these, particularly the IBM and Apple adverts, are quite clever and entertaining. But, they're still not getting the products noticed. MW

"Like politicians or celebrities, computer companies want to be big stars, and adverts give them some semblance of an on-screen persona"

OS X-ready Illustration and layout application

FreeHand 10

Publisher: Macromedia www.macromedia.com/uk
Distributor: Computers Unlimited (020 8358 5857)
Pros: Stable Mac OS X performance; master pages; live previewing of basic Flash triggers.
Cons: Brush Strokes no match for Adobe Illustrator; not a feature-packed upgrade.
Minimum specs: Mac OS 8.6 or Mac OS X; 32MB available RAM; 70MB hard-disk space; Web browser (Netscape Navigator or Internet Explorer 4.0); 800-x-600 colour display; CD-ROM drive.
Price: £279; upgrade from previous versions, £99 (both prices exclude VAT).
Star Rating: ★★★★/8.7



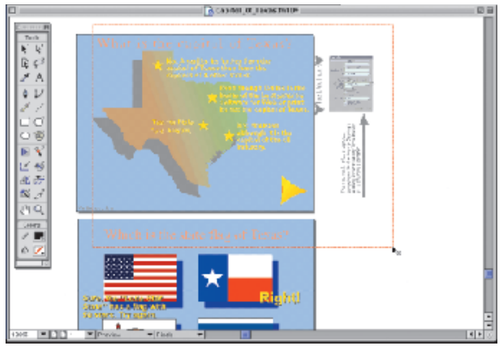
Master time
Make the most of multipage designs, for Web and multimedia, by setting up Master Pages, saving you considerable time on repeated elements.

This time last year, Macromedia wanted you to forget its print-design past, and instead think of it as wholly Web-focused. Today, a similar claim would be commercial suicide. Shrewdly, however, Macromedia never burnt its bridges and continues to publish an annual upgrade to its FreeHand vector-illustration package. The latest release improves on Web-export features, but also targets the jobbing designer in print and multimedia. Crucially, it's the first big-name application to be released commercially for Mac OS X.

FreeHand is intended for professional designers, or anyone who wants to produce high-quality, resizable vector art for print and online presentation. It's not an all-round drawing package for the home or office – there are no flowchart or calendar functions, for example – nor is it priced as such. FreeHand lets you draw by hand, build shapes from other shapes, apply strokes (outlines) and fills (inside areas) to objects, work with textures and gradient colours, and a good deal more. You can print the results to colour separations, render them to bitmaps at any size, or use them as Web graphics. You can export the graphics for use on desktop-publishing pages, or combine photo images within your FreeHand designs themselves, making FreeHand a popular alternative to desktop-publishing (DTP) software in the multipage or poster-advertising field.

As such, FreeHand's closest competitor is Adobe's Illustrator, but it also shares many of its vector-design features with those in CorelDraw and Deneba Canvas. Macromedia says that this latest upgrade is the fruit of user wishlists, so current FreeHand users should be smacking their lips already.

Selective prints
FreeHand 10 now includes a Print Area mode, which allows you to click-&-drag out an area on your canvas that you want to print – without having to print the entire document.



Interface-lift

The most noticeable improvement is the interface. The ever-expanding main Tools panel has been re-arranged helpfully. Items, such as the Pen tool and new Color Selection swatches at the bottom of the Tools panel, work in exactly the same way as their equivalents in Macromedia Flash, Dreamweaver and Fireworks. Despite legal quibbles with Adobe, you can continue to drag floating panel tabs apart and snap them back together, but now also save your preferred panel layouts, and even share them with other users.

Generally, under Mac OS 8 or 9, you should find the palettes and toolbars neater and clearer. Under Mac OS X, they are just gorgeous, having finally broken away from the trademark dingy grey of Macromedia interfaces to date. If you tried FreeHand once and didn't like it, I urge you to try again under Mac OS X – I think you'll find it a very different experience. Sure, there are a number of cock-ups that affect the interface appearance, such as the way the colour square in a gradient bar within the Fill panel jumps to the left of your mouse pointer as you drag it, but I didn't discover any functional problems to stop me working. If you're looking for an excuse to move to Mac OS X, FreeHand 10 could well be it.

Otherwise, as with FreeHand 9 before it, FreeHand 10 is an upgrade that brings a mere handful of big feature additions, but countless tiny enhancements. One of the major items is the Master Pages feature in the Document panel. FreeHand has been a multipage-design package for years – a function that Adobe has inexplicably resisted to this very day in Illustrator – and now the ability to set repeating Master objects across pages DTP-style is a significant finishing touch. You can create up to an unfeasible 32,000 different Master Pages in a single document, and apply updated edits across "child" pages instantly. Turning a layout into a Master Page, – effectively working backwards – is a snap too.

The process is a little confusing at first, but once you understand when you're in Master Page edit mode and when you're in plain page edit mode, it can be an excellent time-saver. It also means you can use FreeHand directly for simple multipage jobs, such as brochures, menus and other design-led booklets.

One of FreeHand's best features in recent versions has been the way it can deal with your designs as identifiable objects and styles. You can, for example, search and replace graphics in FreeHand as you would with text in a word processor. The last upgrade to the program added a Symbols panel, which let you store, re-use and globally update multiple copies of a graphic. In FreeHand 10, this has been renamed the Library panel to reflect its wider use beyond just graphic objects. The Library is now the place where you manage symbols, styles, brushes, Master Pages and so on. It's especially handy since it retains the thumbnail preview pane above the list of names, so you can always pick out the right Master Page by sight, even if you forget which name you gave it.

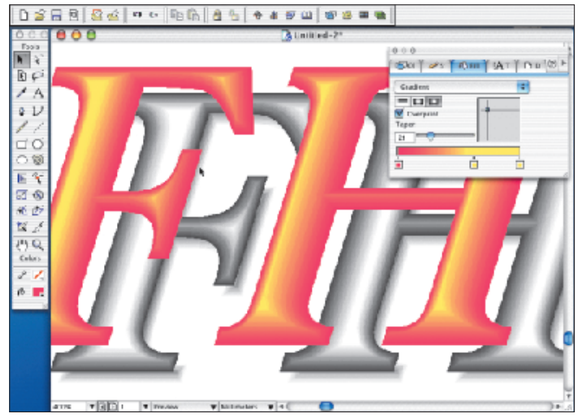
For graphics use alone, the Library panel is still a great time-saver. If a particular graphic is supposed to appear several times throughout a multipage layout, you can simply drag-&-drop it from the Library panel onto your pages. They all maintain a link back to the original stored symbol, even after moderate editing – so if you subsequently change the symbol, all linked instances are automatically updated to suit. In this sense, it's like Find & Replace without the need for any searching.

Another important upgrade feature is the enhanced support for Flash actions within a FreeHand document. Don't get over-excited, though: it doesn't mean you can create self-contained movies in new ways other than the page/frame animations already introduced with FreeHand 9. Rather, the program now lets you apply a wider variety of basic Flash triggers (Go To, Play, Stop, Print, and so on) in addition to standard hyperlinks from within a new Navigation panel.

Having associated some of these triggers with graphic objects, you can now preview their effect without exporting everything to Flash and HTML. Instead, you just select Test Movie from the Control menu and preview it in FreeHand 10's integrated Flash Player.

This way you can fine-tune your animated and interactive processes first, and then export to Flash format at the end when you're happy. Now there's no excuse for not producing your next electronic portfolio or presentation in Flash format, and without having to learn any Flash technique at all; you don't even have to own a copy of Flash itself.

One area in which FreeHand has always been forced to play catch-up with Adobe Illustrator is in custom gradient fills. To fight back a little, FreeHand 10 introduces a new type of gradient it calls Contour. This is prepared on a slider in standard gradient fashion, but the shape of the gradient is determined by the outer shape of the object you apply it to. It's a bit like Ordnance Survey maps of hilly regions, where the coloured bands follow the shape of the mountain, changing from the edge to the centre point.



Limited use
Contour gradients aren't always successful. In practice, they are easy to create, but very difficult to make useful. They can produce some interesting neon effects, gradient drop shadows and the like, and also do some nice things with text once you've converted it to outlines. However, it can make your artwork look rubbish, so use it with care. It's still a long way behind Illustrator's freeform Gradient Mesh.

FreeHand 10's final big new feature is known as Brush Strokes. These let you extend a graphic along a drawn path, such as a railway track, a picket fence or a neon tube. Using a graphic that looks a bit like a splodge of oil paint, you can use Brush Strokes to create almost (but not quite) real-media effects. Because the stroke is edited as a single path rather than as the graphic that has been loaded on it as "paint", you can move, reshape and otherwise adjust the results simply.

This feature can be extremely handy for filling a busy canvas with multiple objects that need to appear similar, but not identical. For example, you could draw an entire shoal of non-identical goldfish in under a minute by dashing away with a Brush Stroke containing just the one original fish.

It's even quite easy to copy an existing graphic or symbol to a Brush Stroke via the Library panel. But unfortunately, applying it can be a confusing affair. You'd expect to load the Brush Stroke from the Library panel to the Stroke panel and get going, but every time you draw a path, the stroke switches back to its default. This is absolutely infuriating until you get the hang of the system; the sequence of selecting, loading and fixing each brush really ought to be simpler.

FreeHand 10's Brush and Spray Strokes are not as slick or powerful as the equivalent feature in Adobe Illustrator. Nor does Macromedia offer as many preset brushes; nor are they as interesting and diverse as Adobe's. Perhaps the feature deserved a decent paintbrush tool as found in Illustrator, rather than relying upon FreeHand's more limited range of pens. Overall, it's a welcome and attractive new feature, but not a compelling one.

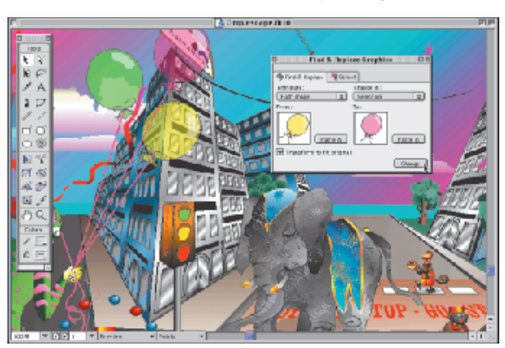
Beyond these big items, FreeHand 10 offers mostly a bunch of tweaks and shortcuts – albeit quite a lot of them. A few will certainly be useful to everyone. Some enhancements will be useful to people who use those particular features a lot, but may not even be noticed by anyone else. For example, clicking with the Pen tool on a path you've already drawn will add additional nodes to it, and you can click the Pen on the end of a deselected path to continue it without having to select it first.

Macworld's buying advice

Despite all this, FreeHand 10 might not seem such a great leap forward for some potential buyers. In that sense, it's a bit like FreeHand 9, which introduced frame-animation Flash export and a real-time perspective grid, but nothing else terribly important. Unless you're having specific problems with your current version, or perhaps if your business is on the Web, you may still be perfectly happy with FreeHand 7 or 8. There's not much here to win over Illustrator, CorelDraw or Canvas users either. But committed FreeHand-professionals, especially those upgrading to Mac OS X, will love it.

Richard Boardman

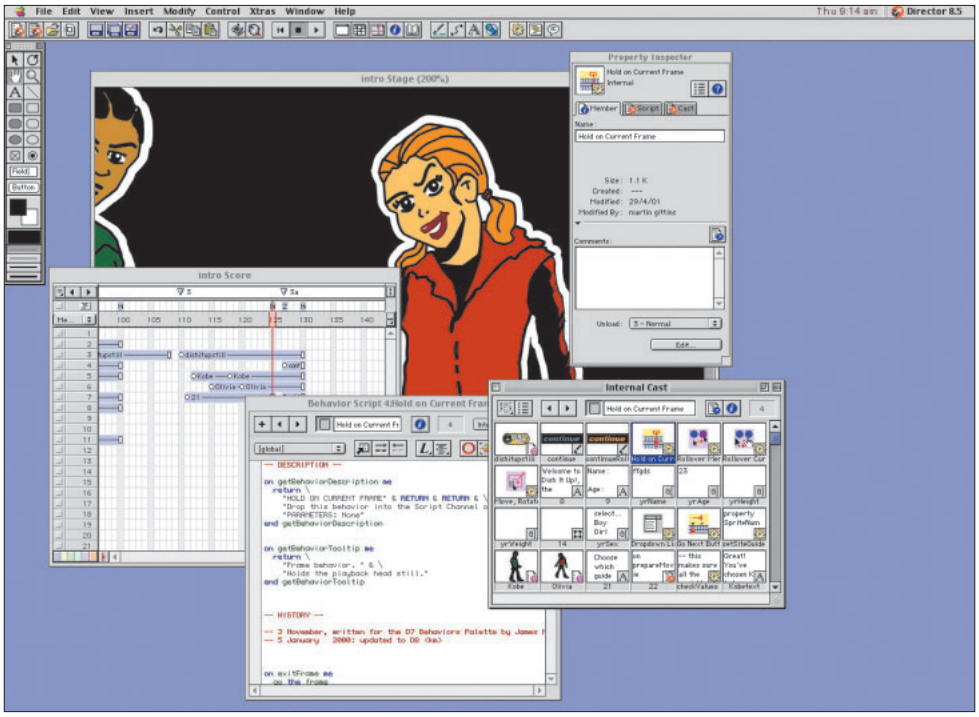
Graphic converter
Don't forget, FreeHand inherits all the powerful features from previous releases, including the unparalleled Find & Replace Graphics dialog box.



3D multimedia application

Director 8.5 Shockwave Studio

Publisher: Macromedia www.macromedia.com
Distributor: Computers Unlimited (020 8358 585)
Pros: Brings interactive 3D to the Web; Flash 5 integration.
Cons: Upgrade of limited value unless you need 3D content; not Carbonized.
Min specs: Mac OS 8.1; 64MB of RAM; 100MB of hard-disk space.
Price: £949; upgrade from 8.0, £149; upgrade from 5-7, £299 (all prices exclude VAT).
Star Rating: ★★★★/8.5



Director rolls on. While Flash has eclipsed Director as the most versatile and ubiquitous tool for creating interactive Web-content, this release (version 8.5) shows there's still life left in the old dog. This latest version adds one major new feature, as well as a number of enhancements that will bring Shockwave to a whole new audience.

Director is now seen primarily as a Web-development tool, for creating content that will be exported as Shockwave and delivered online. Sure, it can still be used for multimedia presentations, CD-ROM development, DVDs, interactive TV and the rest, but it's the Shockwave side of things that's really pushing it on. Not for nothing do they call this Shockwave Studio.

Shockwave boon

Let's start with the big addition to Director – Shockwave 3D. This is the biggest thing to happen to Director since the Flash Asset Xtra back in version 6.5. The new 3D features in Director 8.5 allow you to import 3D objects, animate them, make them interactive, and then export them as part of a Shockwave movie.

Director is able to bring 3D to the Web by incorporating Intel's Internet 3D Graphics software, an adaptive geometry- and rendering-engine developed by Intel for the deployment of 3D graphics at low file-size.

The architecture developed by Intel features a multi-resolution mesh. This allows it to scale to the performance and bandwidth of the user's machine, by scaling the number of polygons that are rendered – as well as surface subdivision – to keep file sizes low, but add detail at the rendering stage. The architecture also incorporates systems such as particle effects – used in most high-end modelling tools, allowing the simulation of complex natural phenomena, such as smoke or explosions.

All this is delivered online through the latest version of the Shockwave Player, which includes the 3D engine needed to render and display the 3D objects embedded into the Director movie. An object's geometry, textures and environments can all be streamed, keeping download times to a minimum. While other Web3D plug-in technologies – such as Cycore's Cult3D and Viewpoint's 3D technology – have gained only small numbers of users, Macromedia can leverage the huge installed base of Shockwave users.

While Director might now sound like a 3D tool, it's not. Just as there are no video-editing tools in Director, even though Director supports digital video, there are no 3D modelling tools in the Director itself – other than a simple text extrusion capability. Director 8.5 simply supports a special new type of 3D file format, called Shockwave 3D, with the W3D file extension. You will still need to use an existing 3D-modelling application to create your 3D models in the first place – or license them from a third party.

Currently, the only application that has an export option for Shockwave 3D is Discreet's 3D Studio Max, which will be a disappointment for Mac users. However, the situation is rapidly changing, as exporters are released for more 3D applications, including Mac-friendly ones such as Cinema 4D, Amapi, Maya, Lightwave and others.

The text extrusion capability is very easy to apply to any existing text cast member, which instantly turns it into a 3D object. You can then define the parameters of the 3D object using the extrusion tab of the Property Inspector. There are few things I hate more than animated spinning 3D text, but this program seems set to give us them in spades.

3D interactive

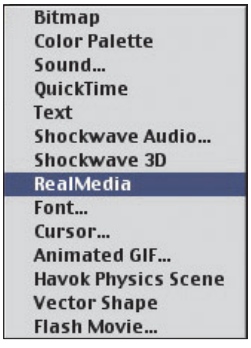
Applying interactivity to 3D objects within Director can be done either using Lingo, or by using the number of 3D behaviours that come with 8.5. Firstly, you apply 3D actions to your 3D sprite, for instance to zoom the camera in an out, and then a trigger that will instigate that action, such as a key press or mouse movement. You can apply a number of actions to an object, and then set up a number of corresponding triggers, so that you could make your 3D scene completely zoomable, pannable or rotatable – all through different key and mouse combinations.

A Shockwave 3D model within Director may consist of a number of objects or groups of objects, and these can also be manipulated individually by Director. It gives you the ability to set certain objects as clickable – for instance in a 3D model of a group of buildings, you may want each building to be a clickable link to information about that building.

The supplied Behaviors are fine for simple interactivity, but more advanced control than this – for instance, to create a button onscreen to rotate your object 360 degrees – will require some knowledge of the new Lingo commands in Director 8.5. The learning curve for this

continues page 55

Familiar face
The user interface of Director 8.5 remains essentially unchanged.



Real compatible
Director 8.5 supports a number of new file types, including Shockwave 3D, RealMedia, Flash 5, and Havok Physics scenes.

is steep. I counted over 320 new Lingo commands – or existing commands that had additional function when applied to 3D sprites – which is why the 8.5 manual of new Lingo commands is over 500 pages thick. Thus, it's not for the fainthearted, but it does give you a much greater degree of control, whether it's to build interfaces to control the interaction with your 3D scenes, or for more complex actions such as detecting collisions between objects. You can even use XML to use dynamic data to send to your 3D objects – for instance, 3D bar-charts.

If you want your 3D objects to obey the real laws of physics – such as friction, collisions, gravity and elasticity – then your mechanics knowledge from A-level maths is really going to come in handy. Fortunately, there's also an Xtra (Havok Physics Engine) available, which provides a real-time interactive physics-engine for realistic motion and interactions without all the pencil chewing.

Gaming action

With Director 8.5 new to the market, it's too early to predict in what ways its 3D capabilities will be used. One thing that is certain, is that games designers will be able to utilize the 3D engine in Director to create fast and furious Web-enabled games.

There's already a playable Quake level that's been coded in Shockwave 3D, so things like Virtual Pool or Tomb Raider clones can't be far away. And all can be delivered over the Web in a browser.

Published Shockwave files that contain 3D objects are viewable only with the new Shockwave 8.5 player. The file size is very compact, and the 3D objects stream as well. This is a remarkable achievement.

While the 3D features make up the bulk of the new features in Director 8.5, they are not the only ones. Perhaps the most significant of these is the support for Flash 5 files. Director 8 supports Flash 4 import only via it's Flash Asset Xtra, which means that you have to ensure your Flash movie is written using only Flash 4-compatible code. With Flash 5 support, all the ActionScript commands and dot syntax from Flash are now recognized within Director.

The Flash 5 support also features a few new commands to increase the amount of communication between the Director movie and an embedded Flash SWF. One of the most important of these is the Telltarget function, which gives you the ability to control the timeline of a movie clip with the Flash movie – previously you would have had to import each movie clip as a separate sprite within Director. Another Lingo addition is the XML command, which provides allows structured data exchange between the Director movie and Flash.

While undoubtedly welcome, the Flash integration could be greater, especially with respect to targeting movie clips. Only a small number of commands are supported – you can set properties for instance, but not variables. You will almost certainly need to think creatively, and adapt your Flash movies prior to import into Director.

Director 8.5 now supports RealMedia import, covering both audio and video, and will enable designers to develop front-end RealMedia players.

To wrap up the rest of the Shockwave Studio, you'll find the Shockwave Player 8.5, Shockwave Multiuser Server 3, the graphics application Fireworks 4, and the sound application Peak LE.

Mac and Java

With Multiuser Server 3 you can create Shockwave applications that allow up to 2,000 users to access a movie simultaneously. One of the most obvious applications for this is the creation of interactive chat-engines. Using the Multiuser server allows the creation of rich environments – with real-time interaction. In a nutshell, this works far better than any other Java based real-time chat you're likely to come across; and the best news for Macintosh users is that the server is totally Mac compatible.

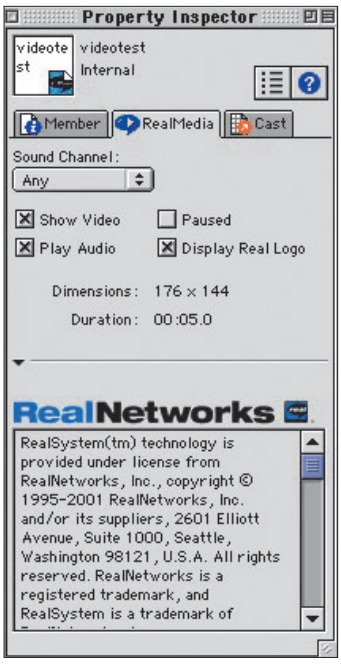
All you need to be able to serve Multiuser applications is an externally accessible IP address. The new version also supports the UDP transport protocol as well as TCP, which apparently makes for faster traffic and improved server-side scripting – allowing more of the data-processing to happen at the server processor rather than the client-side.

There's little to add about Fireworks 4, except to say that it compliments Director perfectly. Image assets in Director can be edited directly in Fireworks, and you can launch just the image-export component of Fireworks to speed things up further.

Macworld's buying advice

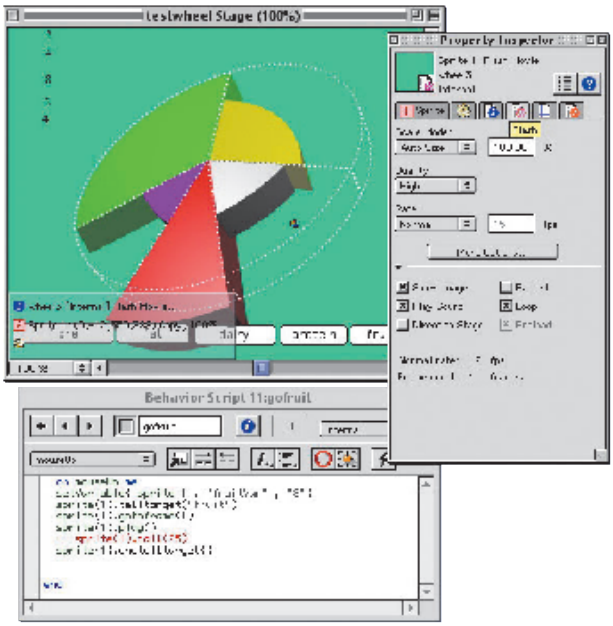
If you've still not discovered Director as a multimedia-authoring tool, then buying the Director 8.5 Shockwave Studio will be like Christmas. It remains head and shoulders above any other multimedia application. Flash may be creating the biggest buzz at the moment, but you can do more with Director, and, of course, you can always embed your Flash movies. For existing users, the upgrade's Flash 5 support is a bonus, while Shockwave 3D will either be the best thing you've ever used, or something you'll never look at.

Martin Gittins



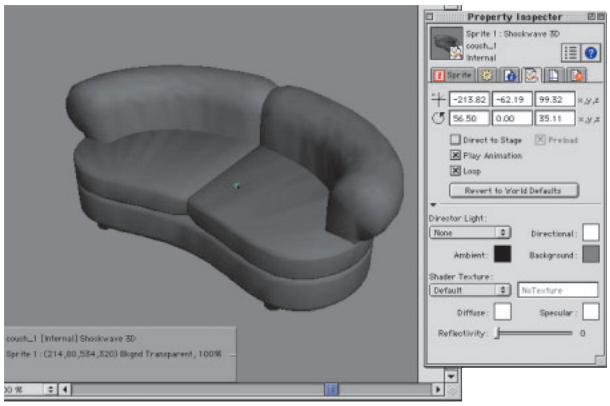
Media management

The RealMedia support will be most useful for online Shockwave applications.



Learning the Lingo

The support for Flash 5 is a welcome addition. Lingo scripts can now target movie clips within the Flash movie, as in this interactive pie chart.



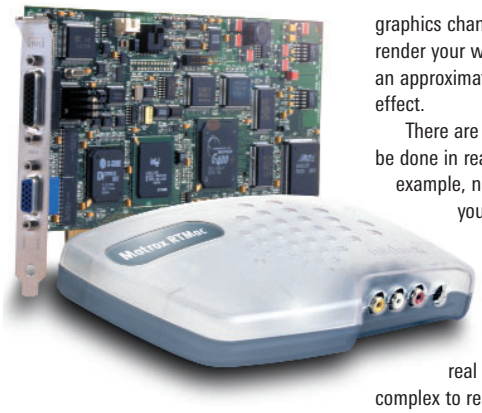
Object of desire

The properties of a Shockwave 3D object can be set using the Property Inspector, including lighting and texture effects.

Real-time video editing

RTMac

Manufacturer: Matrox (01753 665 624) www.matrox.com
Pros: Real-time editing and effects; additional monitor support.
Cons: You have to buy Apple's Final Cut Pro 2 to use it.
Min specs: 400MHz G4 with AGP graphics slot; 256MB of RAM; free PCI slot; Mac OS 9.1; QuickTime 5.0.
Price: £699 (excluding VAT)
Star Rating: ★★★★/8.5



If you are really serious about editing video, then RTMac is a must-have device. It consists of a hardware card that attaches to a breakout box – a device with various audio and video connections. The hardware card takes care of analogue-video capture, and more importantly the effects acceleration.

The most compelling reason for buying RTMac is for its real-time effects capabilities. While the breakout box has analogue-video connections, most people will be using DV which is captured though the Mac's built-in FireWire ports. If you need only analogue to DV capture, then the Formac Studio (See *Macworld*, June) would suffice. The card supports a monitor output, which allows you to have a dual monitor set-up if you have a spare screen lying around. This is very helpful when using an application like Final Cut Pro – with extra room for windows, you can always see what is going on. To use the RTMac at all, you will need Final Cut Pro 2, and that isn't included in the £699 price – it's an extra £680. This is irritating, as the PC equivalent comes with Adobe Premiere and a fistful of other software – the Mac version comes with nothing but drivers.

If you do have the latest version of FCP, RTMac will enable dozens of transitions and motion effects.

It might shave only off thirty seconds here and there, but waiting for rendering effects cuts on creativity. You're less likely to try new things, or change things that don't quite work if you have to wait around for the results. Instant effects let you keep the rhythm of editing, and help you produce better results faster.

The RTMac also lets you work with up to three layers in real time, meaning you can have two video channels and a graphics channel in real time. If it can't render your work in real time, it will show an approximation of the final rendered effect.

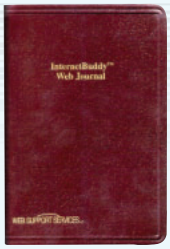
There are some things that can't be done in real time; motion blur, for example, needs to be rendered. But, you should be able to use any motion effect together with any transition at the same time. That isn't to say you can't do more complex effects, just not in real time. When an effect is too complex to render in real time, a red line appears in the render status bar. You can simply choose the highlighted sequence and render as you need to.

Macworld's buying advice

The cost of editing video professionally has plummeted. Now you can use your Mac to do broadcast-quality television or movie work. While Final Cut Pro is an exceptionally powerful piece of software, you can't afford to be drumming your fingers waiting for effects to render when clients are watching. RTMac is the solution to that problem.

It would be nice if Matrox had included FCP, but even when buying it separately, the solution should pay for itself in a professional environment. If you want to use a Mac in an edit suite, the RTMac offers the right features, and will reduce those pauses that slow rendering inflicts on the editor.

David Fanning



InternetBuddy Web Journal

Publisher: Web Support Services www.websupportservices.com
Pros: Handy size; specially designed pages for Web information.
Cons: If you lose it… that's all your info gone; needs more pages than are included.
Star Rating: ★★★★/7.5

Passwords for myriad Web sites can be impossible to keep track of. You can organize them efficiently by using the InternetBuddy Web Journal. The InternetBuddy, a 5-x-8-inch ring-bound organizer, consists of index pages and detachable security cards for passwords. You enter your real passwords against a proxy Password 1, and then enter Password 1 in the relevant Web site section of your Buddy. Lose it, and at least your passwords are safe – even if you don't know what they are for.

Gillian Thompson

ATA drive connector

Ahard PCI RAID Ultra ATA66

Manufacturer: Acard www.acard.com
Distributor: TMC Technology (01438 842 305)
Pros: Simple and effective; Mac OS X compatible.
Cons: Short on instructions.
Min specs: PCI slot; two ATA drives.
Price: £189 (including VAT)
Star Rating: ★★★★/8.4

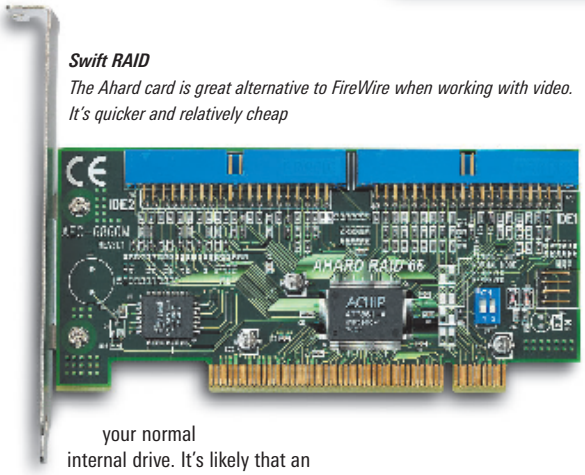
If you want to add to your hard-disk storage with minimum cost for maximum speed, the Ahard from Acard is a terrific solution. It lets you combine two fast-but-cheap ATA drives as a single RAID volume. This will outperform most single drives – SCSI or ATA – without a problem.

When I tested FireWire hard drives a few months ago, I was disappointed to find that the drives weren't that well-suited to audio-visual (AV) work. Because FireWire drives use a bridge between the FireWire connection and the ATA drive, the results were slow. The Ahard card will allow you fantastic speeds at relatively low prices.

If you are not that familiar with the inside of a Mac, you may be forgiven for a little reluctance to delve. However, installation and set-up is pretty straightforward, at least in G3 or G4 towers. All you need is the Ahard card, a couple of ATA drives and a screwdriver. You can pick up a 40GB ATA drive for £125, so for £250 you can get an extra 80GB of internal storage. This is great for video projects – big enough for a full-length feature film, and fast enough to keep up with the throughput.

You set the drives up as a single volume by flipping a couple of dip switches and formatting. Because the RAID is a hardware setting, it doesn't depend on software to mount the volume. This means the card works perfectly with Mac OS X.

The performance will differ depending on what make and model of hard drive you use. However, it should easily outstrip your normal internal drive. It's likely that an Ahard RAID system will be fairly close in performance to a SCSI RAID system, but at a fraction of the cost.



Swift RAID
The Ahard card is great alternative to FireWire when working with video. It's quicker and relatively cheap

Macworld's buying advice

If you want to use your Mac for video work, the Ahard RAID is an ideal way of solving the storage problem. It gives you all the speed you need, and bumps up your space for minimal expense.

David Fanning

Macworld reviews

Projector round-up

C60

Manufacturer: Ask (0800 028 6470) www.infocus.com
Pros: XGA output; 2.6kg.
Cons: None.
Min specs: VGA or video source.
Price: £2,590 (excluding VAT)
Star Rating: ★★★★/8.2

EMP-50

Manufacturer: Epson (0800 220 546) www.epson.co.uk
Pros: Cheap; sturdy.
Cons: 600-x-800 pixels maximum output.
Min specs: VGA or video source.
Price: £1,799 (excluding VAT)
Star Rating: ★★★★/8.1

EMP-703

Manufacturer: Epson (0800 220 546) www.epson.co.uk
Pros: High specs.
Cons: High price; bulky compared to the LP130.
Min specs: VGA or video source.
Price: £3,999 (excluding VAT)
Star Rating: ★★★★/7.4

LP130

Manufacturer: Infocus (0800 028 6470) www.infocus.com
Pros: Small; powerful; light.
Cons: Still out of many people's budgets.
Min specs: VGA or video source.
Price: £3,290 (excluding VAT)
Star Rating: ★★★★/8.7

Size up the options
While DLP projectors, like the LP130 (top), are shrinking fast, the EMP-703 (below) is possibly as small as LCD technology will allow.

Five years ago, a portable digital-projector cost around £5,000, would have made a mockery of the word of portable, and had a brightness of around 400 ANSI lumens. Modern projectors' specs have improved greatly, but the price hasn't shrunk much. We took a look at some of the most recent models – the smallest, lightest and most expensive end of the market, and also some lower-specification lower-price models.

The latest ultra-portable projector from InFocus is now smaller than a laptop, and pumps out 1,100 ANSI lumens. Epson has a comparable projector. Though not quite as tiny as the InFocus LP130, the EMP703 offers similar specs at a similar price.

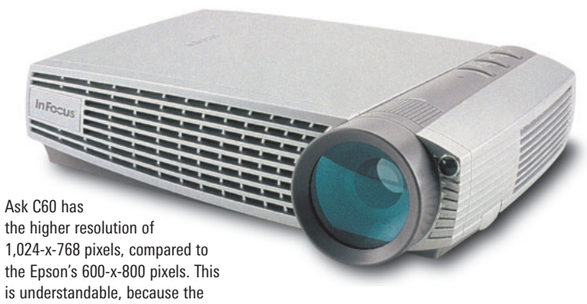
Size matters

Even the entry-level models are considerably smaller than their predecessors. We took a look at Epson's EMP-50 and the Ask C60. Again, both models have similar specs, and the prices are in the same neighbourhood.

The entry-level models are bulky compared to the ultra-light class, but, compared to older models, reasonably compact. Neither model is back-breakingly heavy, with the Epson weighing in at 3.1kg and the Ask at 2.6kg. The dimensions are pretty much the same.

Both models are based around three 0.7-inch LCD panels, which explains the similar dimensions – though it doesn't explain where Ask lost 0.5kg. The brightness is 1000 ANSI lumens on the Epson and 1,100 on the Ask. When both projectors displayed an image side by side, the picture wasn't obviously brighter on the Ask; however the colour seemed slightly washed out on the Epson. Both machines claim a contrast ratio of 400:1, which should mean a greater range of colour. However, claims about brightness and contrast are notoriously difficult to verify. In our tests the Ask came out slightly in front for image quality.

Picture resolution is an important measure of a projector, and again, the



Ask C60 has the higher resolution of 1,024-x-768 pixels, compared to the Epson's 600-x-800 pixels. This is understandable, because the Epson is almost £800 cheaper.

Resolution is an important measure of quality for an LCD projector – the more pixels you have to play with, the crisper the image will be. If you're projecting a PowerPoint presentation, for example, small text can be distorted beyond recognition if the resolution is too low. Both projectors have a video input, and video – which is comparatively low resolution anyway – looks terrific on either model.

Noise reduction

Both models have a speaker system, but neither is high quality. The Ask comes with stereo 1W speakers, while the Epson has only a single 1W speaker. If you were to watch a movie on one of these projectors, I would recommend connecting your video to some more powerful speakers. In the boardroom, the small speaker works well enough, and if anything will save you from naff swooshing page-turn sound effects that litter so many sales presentations.

The other aspect of sound is of course the noise from the very necessary fan. Because these projectors use such bright bulbs, the heat generated is tremendous. Fans are noisy because they churn-up air. The EMP-50 was noticeably noisier than the Ask model, but both were quiet compared to older models.

Choosing between the two models is not easy. The Ask model beats the Epson on almost every count, but it doesn't beat it by much. As far as pricing goes, the Epson is the most affordable at £1,799 (excluding VAT), while the Ask is £2,590. So even though the Ask is a slightly better projector, is isn't immediately obvious that it's worth the extra money.

Money is probably going to be the deciding factor for these two projectors – by paying for the extra resolution, you're increasing the useful life of the projector. The lower-resolution model will be outdated much quicker. So, it makes sense to pay the extra for the extra features. However, if your budget is tight, it's better to have a projector than nothing at all. If you budget doesn't stretch to £2,590, the EMP-50 is excellent value.

Top end

The other two projectors we looked at are definitely not for the budget conscious – the more expensive model is almost four grand. What you're paying for is the ultra-portability of a high-end projector with no expense spared. The InFocus LP130 is a real show stopper, eliciting interest from anybody that saw it. It's the smallest projector out there, yet it has the punch of models twice its size.

The reason that InFocus can make such a small projector is because it uses a DLP chip. A DLP chip, or Digital Light Processor, is basically a RAM chip covered with microscopic mirrors, on even smaller hinges. As the chip is addressed, each of the mirrors is switched to an On or an Off state. It all seems very fragile, but it's remarkably sturdy – because the weight of the mirrors is so small, they are largely unaffected by knocks of vibration. As the DLP is a single chip, the size can be brought right down.

Epson doesn't use DLPs in its projectors, most likely because it has so much invested in LCD technology. There seems to be a reluctance to use technology that is developed outside Epson, which is a shame. Consequently, the Epson projector uses three LCD panels, which inevitably make the EMP-703 much bigger.

The LP130 weighs-in at a featherweight 1.6kg, compared to the 703's 2.7kg. The LP130 is smaller too, measuring just 170-x-219-x-51mm. The Epson measures 267-x-213-x-72mm, more than twice the size.

It almost seems unfair to compare the two models, but both have similar specifications. The Epson isn't a particularly large projector by normal standards; it's just that the LP130 is incredibly small.

Both models sport an XGA (1,024-x-768 pixels) output, and both are very bright – with the LP130 claiming 1,100 ANSI lumens and the EMP-703 claiming 1,000 ANSI lumens. As with the other

Price projection
Though similar sizes, the Ask C60 (above, left) packs more of a punch than the EMP-50 (above), but costs an additional £800.

models tested, the difference in brightness is negligible and extremely difficult to measure accurately. Either model would be bright enough to project on to a screen without dimming the lights – though, if there is direct sunlight, it would be necessary to draw the curtains.

Portability is a main issue for these models; both are sold as ultra-portable projectors. The Epson is definitely small enough to carry around without breaking backs or slipping discs. This is a major step forward considering the "luggable" 12kg models around only a few years ago. The Epson is still bulky compared to a PowerBook though, and would probably need an extra bag. The LP130, however, is so diminutive that it almost puts the PowerBook to shame. It seems much more suited to the new iBook.

Macworld's buying advice

It would seem that the LCD price-war (see page 43) may be starting to affect the projector market. Although not all of the models tested use LCD technology, the prices are shifting. Just before we went to press, InFocus wiped £1,000 of the price of the LP130 – reducing it to £3,290. This hasn't left Epson time to react with a new price, so for the moment the EMP-703 remains at £3,999; but it's likely to change before this issue hits the streets.

The new pricing brings the LP130 down from an unobtainable executive plaything to a price that companies can more readily afford.

At the moment, the high-end ultra-portable market is dominated by the LP130, at least until Epson re-jigs its prices. At the entry-level, the EMP-50 does a perfectly good job for the price (£1,799 excluding VAT). With a little extra budget you will get a little more performance and functionality from the Ask model.

David Fanning

Mac-music starter guide

Macworld Music Handbook

Publisher: Sanctuary www.sanctuary-publishing.com
Distributor: Macworld (020 831 9252) www.macworld.co.uk
Pros: Well-written starter guide; not too technical; extensive glossary.
Cons: No index.
Price: £20
Star Rating: ★★★★/8.5

As *Macworld* columnist Michael Prochak spells out in the introduction to his *Macworld Music Handbook*, the Mac has long been the choice of professional musicians for the recording, manipulation and playback of digital audio. USB and FireWire technologies mean that all new-Mac users can easily and instantly connect digitizers, MIDI devices and DAT storage drives in order to capture high-quality 44.1kHz audio tracks at ultra-fast speeds.

But, there hasn't been a book devoted to Mac-based music making since Fatboy Slim was nerdy Norman Cook in The Housemartins.

Rather than write about every single piece of Mac-compatible music software, Prochak sensibly concentrates on Steinberg's Cubase VST (version 5.0). Cubase is one of the Mac's most popular virtual studios, "in" which you can record, edit and process MIDI and audio data in a creative and affordable manner.

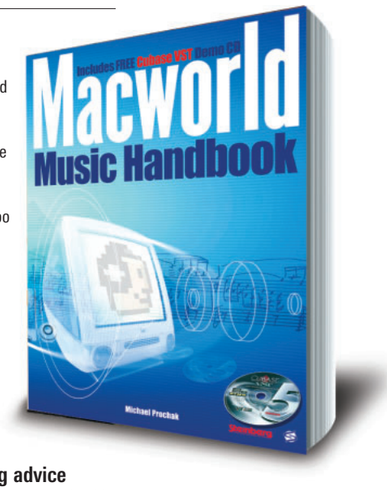
Helpfully, the bundled CD includes a demo of the latest version of Cubase VST. (You may also have noticed that there's a couple of extract chapters in a free booklet attached to this copy of *Macworld*; so we've included the Cubase demo on this month's *Macworld* CD.)

Prochak points out that Mac users traditionally hate manuals, and so approaches his subject as a musician helping others to familiarize themselves with Cubase, the Mac and digital music-making.

"The Macintosh is changing the way in which music is made. What used to be done by a team of people in an expensive editing studio can now be done by one person at home. All it takes is the right equipment and a bit of knowledge about the basics of digital recording and MIDI," writes Prochak.

And, that's exactly what he helps budding Mobys and Beastie Boys with in this book. There's chapters on the differences between pro and budget setups, buying the right equipment, getting started with Cubase, mixing MIDI, editing and manipulating tracks, adding effects (such as Grungelizer and Wild Flanger), quantizing, and customizing.

At the back of the book, there's a 100-page glossary – so that experienced studio-engineers can't make too much fun of you when you're just starting out. On just one page, this tells you the difference between a ribbon microphone and a ring modulator, a riff and a roll-off, and a rhythm track and "riding the faders".



Macworld's buying advice

Regular *Macworld* readers will be familiar with Prochak's bozo-Gonzo writing style, and will be glad to know that he has written this book in a similarly non-technical manner. The *Macworld Music Handbook* is an excellent guide for Mac users starting to make music, and for musicians starting to use the Mac. Whether you want to be a Kraftwerk-like synthetic robot or a bit of a hippy (like Prochak), this long-awaited book is sure to help lay down your tracks.

Terry Church

Cheap-and-cheerful CD burner

Click'N Burn

Publisher: Stomp www.clicknburn.com
Distributor: Intellica UK (020 8887 0328)
Pros: Cheap; simple to use; includes CD Stomper labelling kit; good range of burning options; can be dedicated for FireWire, USB or SCSI.
Cons: Lacking some more advanced features of competition.
Min specs: Mac OS 8.0; 32MB RAM; supported CD recorder.
Price: £42 (including VAT)
Star Rating: ★★★★/7.5

In a market dominated by Toast, launching another CD-burning application may seem to be foolhardy – especially as Apple's free iTunes has a burning capability. But Stomp has brought out a cheap-and-cheerful toaster.

Click'N Burn gives you the option of choosing the interface of your burner – SCSI/ATAPI, FireWire or USB – and installs the appropriate drivers and software for each. Once installed, the user has two options – quick start and advanced mode. For the review, I concentrated on the latter, kicking off in Audio CD burning mode.

Losing a point to Toast, Click'N Burn can't connect to the CDDB database, so you'll have to enter name songs manually.

It took 14 minutes to burn a normal audio CD on a 4x Speed Yamaha CD-Burner. There were no problems, and the disc played perfectly. (You have the option of using literally hundreds of other, faster burners, but check for compatibility first.)

This involved simply dragging the MP3 files onto the main audio window. They then automatically expanded into AIFF files to make them compatible to burn. Again, the results were adequate.

Click'N Burn also provides Audio Scribe software, which acts as an analogue-to-digital recorder, allowing you to transfer music from vinyl. This is comparable to Toast's CD Spin-Doctor.

Burning data CDs is just as simple. Click n' Burn can deal with Mac HFS volumes and Mac/ISO 9660 hybrids, copy CD to CD-RW, and burn multi-session discs in the same fashion as the Audio routine. This being a product from Stomp, you can finish the process by labelling your CDs with the bundled CD Stomper.

Macworld's buying advice

Click'N Burn doesn't have the most advanced feature list in the world, and you may be put off by the dull interface. But, it's a good for the price. If you're looking for a simple-to-use and cost-effective solution, check it out.

Michael 'Click n' Burns

Burn out

Click'N Burn gives you the option of leaving the disc open for another session, so you can add tracks to squeeze the last bit of space onto that CD. Being that miserly, I decided to burn some MP3s on the end.

Cheap 3D with high-end specs

LightWave 6.5

Publisher: NewTek www.newtek.com
Distributor: Gomark (020 7610 8686)
Pros: Integrated 3D tools; great rendering engine; integrated particle-system.
Cons: Poor documentation.
Min specs: PowerPC; Mac OS 7.5; 32MB of RAM; QuickTime4.0; QuickDraw 3D 1.5.4.
Price: £995 until July 31, then £1,599 (both prices exclude VAT).
Star Rating: ★★★★/8.9

Given the Mac's graphics superiority, it's surprising that 3D production on our platform of choice has, until recently, been a piecemeal process. One of the first fully integrated 3D packages to migrate to the Mac from the Unix world was NewTek's LightWave, a powerful application for creating television and film effects.

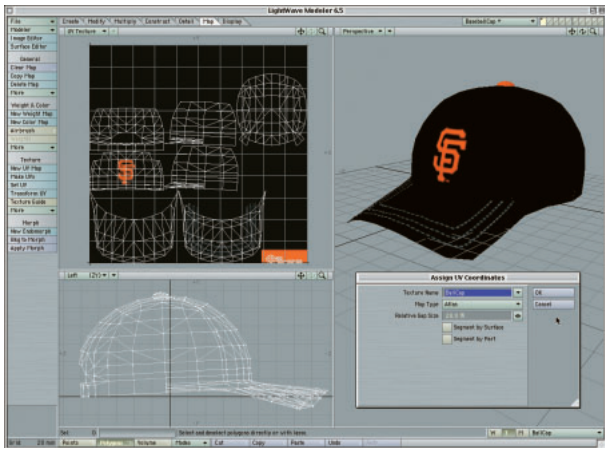
LightWave is a collection of applications: Modeler, for creating objects; Layout, for animating and rendering; and Hub, for updating projects.

Modeler is polygon and spline based. It offers an efficient surface-subdivision mode that can create smooth organic forms similar to what you'd get with NURBS modelling. The program includes a collection of tools for patch modelling, along with "viewports" that you can use as UV-mapping editors for precise placement of textures.

Some notable additions in version 6.5 are an integrated particle system, a soft-body dynamics engine, automated Atlas mapping tools, and a new Schematic view. Other welcome enhancements include a reorganized interface, a bézier-curve tool, and resizable viewports.

Several powerful procedural animation tools make complex motions easier to set up. An integrated particle generator – when used in conjunction with HyperVoxels, LightWave's volumetric-object generator – lets you simulate smoke, explosions, and fluids. Motion Designer can force objects to behave like cloth that can be influenced by any other element in the scene.

But, no matter how many impressive features a 3D package offers, it all comes down to rendering – and LightWave excels at this. The ray-tracing engine can calculate realistic reflections, refraction,



and caustics; the radiosity engine allows you to illuminate a scene using photographs saved in the HDRI format.

Macworld's buying advice

For anyone looking to buy a complete 3D-production package, LightWave is tremendous value – especially when you consider that many standard features, such as particles and dynamics, are available only as plug-ins in other packages.

Matt Lowrie

Hats off to mapping

LightWave's Atlas function automatically "unwraps" models.

Accessible 3D tools

Amorphium Pro 1.1

Publisher: Electric Image www.amorphium.com
Distributor: Gomark (020 7731 7930)
Pros: Unique modelling tools; easy to use.
Cons: Skimpy manual; not Carbonized.
Min specs: Mac OS 8.6; PowerPC; 64MB of RAM.
Price: £209 (excluding VAT)
Star Rating: ★★★★/8.2

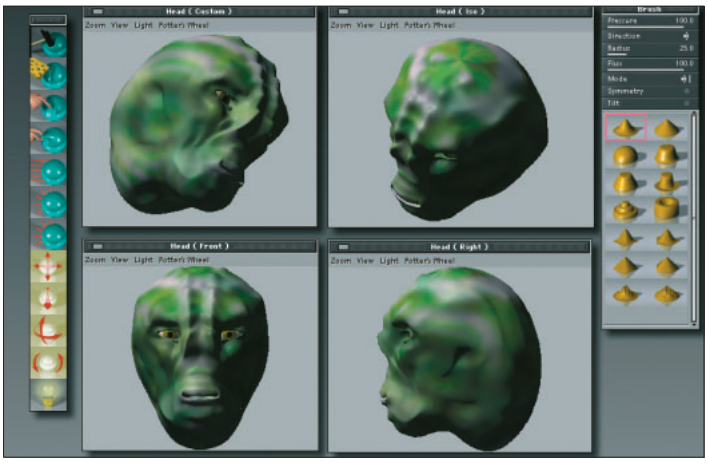
Electric Image's Amorphium made 3D modelling more accessible, by putting intuitive sculpting tools into a simple interface inspired by image-software wizard Kai Krause.

Like Amorphium, Amorphium Pro lets you modify objects as though they were made of clay, apply sculpting and painting tools, and employ real-time distortion effects. But, the new version removes the original's most frustrating limitations. A full keyframe-animation timeline lets you animate multiple objects, the camera, lights, and environmental effects. The vastly improved Materials function lets you define surface colours and properties, and you can add surface effects with shaders.

In addition to importing models in popular 3D formats, the program can import EPS files and convert them into 3D objects. And, Amorphium Pro's extensive Flash-export options let you choose between realistic, high-bandwidth animations and more-cartoonish ones that consume less space.

A new Wax mode, complete with a Heat setting, lets you expand or contract a model's geometry as if it were a lump of wax. As before, you can use linked spheres to create fingers and other objects. With a new parenting function, you can link one object's motion to another's, and Boolean functions let you create new objects by intersecting existing ones. With the improved masking tools, you can reduce or expand polygon density in different parts of a model.

The manual is skimpy, and at £209, Amorphium Pro costs £50 more than the original.



Special FX
Amorphium's basic sculpting functions are now split between two modes. Tools mode has a new Brush Editor for creating your own sculpting tools; FX mode now has a Cogs effect that lets you produce gear-like objects.

Macworld's buying advice

Amorphium Pro vastly expands on Amorphium's feature set, and remains remarkably easy to use. It's a great tool for Flash developers, 2D artists with an interest in 3D, and 3D artists looking for a new organic-modelling program – it's just a shame about the price hike.
Stephen Beale

3D-modelling app

Amapi 3D 6.0

Publisher: Eovia www.eovia.com
Distributor: Computers Unlimited (020 8358 5857)
Pros: Fluid and intuitive; excellent results.
Cons: Flaky; proprietary Web3D technology; not Carbonized.
Min specs: Mac OS 8.1; 24-bit True Colour display, 64MB of RAM.
Price: £299 (excluding VAT)
Star Rating: ★★★★/7.5

Although Amapi 3D has some basic animation capabilities, it's largely a modelling and rendering tool for creating static 3D artwork – which makes it a rarity on the Mac. It has an unusual interface that some people think is the best thing since sliced polygons, and some run screaming from. And now it's taken individuality to new lengths with its Web3D format, 3Space.

On its own, 3Space is a pretty decent format. It includes all of the standard features, such as simple animation capabilities for allowing the user to click and open the door of a toy car. However, it also includes a full dynamics-system that allows you to give objects force, mass and other properties – such as stiffness and damping. This allows the creation of realistic interactive environments without fixed results – such as snooker table with potable balls.

3Space files are small, even when compared to other Web3D formats, and are rendered in OpenGL by the end-user's computer. The main problem with 3Space is that it's not Shockwave 3D. There's no point working with a format that has no user base. MetaStream Viewpoint has the user base at the moment, and Shockwave has a huge number of potential users who need only a minor update to get onboard. And, that's not counting Adobe's venture into this market with Atmosphere later this year. That 3Space doesn't work with Internet Explorer on the Mac is another reason to avoid it.

If you don't care about Web3D, then Amapi 6.0 is a better prospect. Its tools have had a major overhaul, with a refined smoothing tool and a clearer interface. The polygon tools have been boosted, and a better tessellation tool added.

The app includes more primitives and deformers than previous versions. It also adds totally new tools, such as the height field object for creating a relief from a greyscale image. You also get an extrude tool that can work multiple sections of an object (or the entire object) and a bump/unbump control for contouring surfaces. On the downside though, Amapi can be flaky. It has a tendency to crash and sometimes won't open saved files – though you can always import them.

Spaced out
3Space results look good on both Mac and Windows PCs – if these were the only criteria for judging a format, then 3Space would be one of the best available. But, they're not.

Macworld's buying advice

It produces stunning results, but is let down by 3Space – and flakiness.
Moe Vernon

Hi-res digital camera

PhotoPC 3100z

Manufacturer: Epson (0800 200 546) www.epson.co.uk
Pros: Monster file-size; good software support; flash mounting.
Cons: A little bulky.
Min specs: USB or a Compact Flash card reader.
Price: £649 (including VAT)
Star Rating: ★★★★/8.6

At first glance, you may wonder what the difference between the new 3100z and the old 3000z is. The major specifications are the same; it still has a 3.3-megapixel chip, which when combined with Hypict technology outputs files that are nearly five megapixels (2,544-x-1,904 pixels). This makes it ideal for printing A3 images.

There is, however, a raft of small but significant enhancements. For instance, there's now a built in photo-stitching assistant. This isn't just an extra piece of software – although there is one thrown in the box – it's actually a mode on the camera. In stitching mode, each picture you take moves to the left quarter of the view and becomes translucent. This allows you to line up the next shot of your panorama without the guesswork.

It still has a 6x zoom – 3x optical and 2x digital – but the digital zoom has been improved and is now smoother than before. The big lens gives you an excellent, sharp picture – even in the Hypict high-resolution mode.

Getting your images from the cameras to the printer is now much easier than before. Rather than depending on a card reader or a software-driven USB connection, the 3100z actually works like a card reader. Simply plugging it in to a Mac with USB will automatically mount the card in the camera on the desktop. This makes life simple, and is another minor refinement that improves the camera.

The interface for the controls on the back screen is simple to navigate. You can turn off the camera's helpful beeps if you find them irritating. You can also access the special modes such as video, panorama and continuous mode. Adding a voice notation is easy too – the 3100z has plenty of tricks up its sleeve.

Macworld's buying advice

The 3100z is bulky compared to some cameras, but the extra weight adds to its feel as a traditional camera. If you don't mind the bulk, it's excellent for high-resolution pictures – if you want to print A3 size photographs, the 3100z is ideal.

The 2,544-x-1,904 pixel output is as high as you really need, and it's good that Epson has concentrated on other ways to make the camera better. Now that the resolution race is done with, and the digital-camera market matures, we will see more functional cameras like this one. It's packed with both pixels and features.

David Fanning

Web-based training

Macromedia University

Publisher: Macromedia macromedia.elementk.com
Pros: Learn when and where you want; easy-to-use campus-style training; online advice if you need specific direction.
Cons: Needs a wider range of subjects; Windows interface.
Price: Basic Training, US$99; Complete Training, US$249; Professional Training, US$399.
Min specs: PowerPC; Mac OS 8.0; Netscape 4.0 or Microsoft Internet Explorer 5.0
Star Rating: ★★★★/7.2

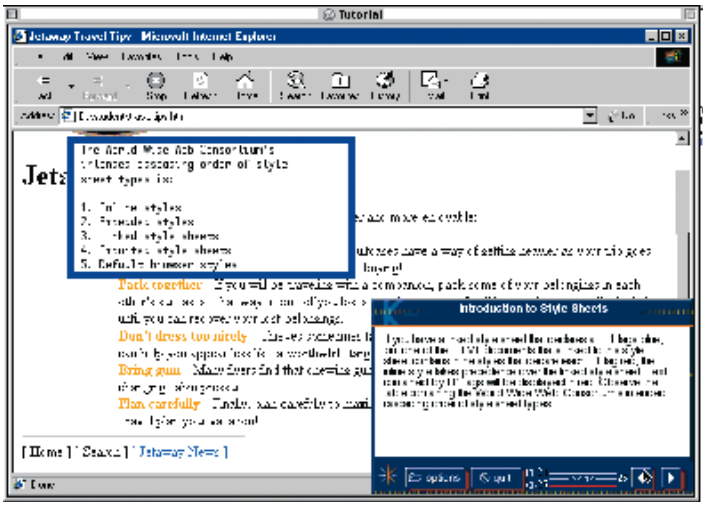
As one of the leaders in design applications, Macromedia now offers online courses for its software – from learning how to use Macromedia UltraDev, to more general skills such as DHTML or XML. You can choose to sign up for either instructor or study led courses, or a combination of both.

To register as a student for the Macromedia University, you first need to go to www.macromedia.com and click on the link to Resources. The registration process is simple: Fill out your details, enter your eight-digit code, and log in as a student with access to several choices.

You can choose from several different lesson styles – instructor led, self-study and seminar, or a combination of any of the above. Take time to have a quick tour of what's available to make sure you sign up for the right class. Unfortunately, I was first interested in running through the self-study Quick Skill course in DHTML, but it isn't available for the Mac.

The classes are listed clearly, and you can take a tour of the virtual campus before signing up. There's also the option of taking a test, from which the courses to choose will be recommended.

A study-led course has the advantage of allowing you to choose when and where you work. However, for those of us who need more motivation – the equivalent of that slave-driving teacher – an instructor-led course is available.



On course

Macromedia University remembers your preferences, selected or semi-completed courses, and level of skill achieved. The My Courses page summarizes which classes you have completed and how many levels are still to go. However, it has a Windows-interface option only.

The classes are presented as interactive Flash movies. Not only are you shown how to perform a certain action, you're also encouraged to follow the steps and remember sequences. If you get stuck or lose your place, simply listen to the instructions again.

Macworld's buying advice

If you aren't lucky enough to have access to a high-bandwidth leased line in your office, then the cost of spending time online could be prohibitive. You don't need any Macromedia software to do the course (other than Flash Player). The learning is done through a browser, so you save money there.

A subscription to a course library grants you a year of access to all current courses, plus any new courses added during the year. If you want to see if the training courses are worthwhile, Macromedia is offering a 30-day trial.

Gillian Thompson

Pirate adventure with comic twists

Escape from Monkey Island

Publisher: Aspyr Media www.aspyr.com
Distributor: Softline (01883 745 111)
Pros: Engaging story; terrific graphics; many challenging puzzles.
Cons: Occasionally too self-referential; not for players with short attention spans.
Minimum specs: 233MHz Power Mac G3; 64MB of RAM; 8x CD-ROM; 100MB hard-disk space; 4MB of VRAM; OpenGL 1.2.1.
Price: £40 (including VAT)
Star Rating: ★★★★/8.8

Monkey business
Don't let the brightly coloured, cartoonish animation fool you – kids may enjoy this title, but it's definitely made for adults (the game is recommended for teens and adults).

Yo ho, yo ho, a pirate's life for me! Ever since I was a wee lad, I've been obsessed with pirate stories. This hasn't abated in my adult life – much to my therapist's fascination, I'm sure. So when I heard that Aspyr Media was publishing a Mac version of LucasArts' latest Guybrush Threepwood adventure, Escape from Monkey Island, the Blackbeard in me wildly gyrated his hook and peg leg with joy.

Escape from Monkey Island is a rollicking good time, and thanks to recent advances in graphics technology, it's a feast for the eyes as well.

Escape from Monkey Island is the fourth adventure game to star Guybrush Threepwood, a wannabe pirate, and an unlikely hero if ever there was one. Although he's a bit daft, he means well. And as the story unfolds, you'll find that even though Threepwood may have a bit of Walter Mitty in him, he's not just a daydreamer – he's a doer, but in his own bumbling, incompetent sort of way. In fact, he's already won the hand of the beautiful and plucky Elaine Marley-Threepwood, resident governor of Mêlée Island – a veritable pirate haven.

Elaine and Guybrush return to Mêlée Island after a three-month honeymoon to discover that Elaine has been declared legally dead. Elaine's gubernatorial seat is up for grabs, and challenger Charles L Charles is making his play for the position. Charles is a new – yet disturbingly familiar – presence in town. Guybrush and Elaine soon discover that proving Elaine's identity and health status is more difficult than they thought, and that their old nemesis, pirate LeChuck, is behind recent events.

What makes this adventure tale so engaging is that it's firmly rooted in situations that folks can identify with today. Threepwood's archnemesis LeChuck may be a supernatural force straight from the flaming bowels of hell, but Guybrush needs to solve all sorts of mundane – and riotously funny – problems in his attempt to vanquish him. Threepwood and his band of brigands square off against the most fearsome menace on the high seas: lawyers. Threepwood also goes head-to-head with a real-estate tycoon, a thief with no nose, a prosthetics salesman, and perhaps the most frightening of all, a bucktoothed barista at the local Starbuccaneers coffee shop. That's only the tip of the iceberg, mateys – to tell you any more of the story would ruin the surprise.

Throughout, the game is rife with well-written dialogue, superbly delivered by top-notch voice actors. And, there's an engaging soundtrack accompanies the action – I didn't scramble to turn off the music after the first few minutes.

Escape from Monkey Island's user interface is intuitive and straightforward. The game consists of 2D illustrated backgrounds, populated by 3D characters and objects.

You direct Guybrush using the arrow keys on your keyboard, and you can make him look at, use, or store various objects, as well as talk with characters. When Guybrush needs to address someone, you're presented with a branching menu containing various comments, queries, and replies, depending on the context.

The game is cleverly designed, so if you haven't yet explored a crucial area or got a key piece of information, your interaction with other characters in the game may subtly change so as not to give the story away. This level of detail is refreshingly complex and challenging.

Escape from Monkey Island is also nicely configurable – you can set keys to execute a variety of commands, tweak audio and video settings to your liking, and save the game at any point.

The 3D characters and objects in Escape from Monkey Island are rendered using OpenGL, which can tax a Mac's graphics hardware. Aspyr recommends running the game on a Mac with an ATI Rage Pro or comparable graphics-card and at least 64MB of RAM. Westlake Interactive, the company that ported the game from the PC, did a nice job on the conversion. Installation was a breeze, and the game performed reliably, although it did crash once or twice on my 450MHz Power Mac G3. Interestingly, it ran perfectly on my 333MHz PowerBook G3, which is slower and equipped with less-formidable video hardware. The game's only apparent technical deficiency is a prodigious appetite for space on your hard disk. It needs 500MB in "normal" installation mode, 1GB for the full installation, or 100GB for light mode.

If Escape from Monkey Island has any shortcomings, it's that the game often depends on self-referential jokes, and on characters who were introduced in the series' first three games – which you probably haven't played, unless you have a PC lying around. If you aren't already a Monkey Island fan, you'll occasionally have that somewhat uncomfortable feeling of not being in on the joke.

As a single-player adventure game, Escape from Monkey Island can be played only once. But it's vast, spanning two CDs in all, and you can count on getting days – if not weeks or months – of challenging fun out of it, depending on how much time you invest. Like a long, engrossing novel, Escape from Monkey Island would be a good game to be stranded with on the proverbial desert island.

Macworld's buying advice

Escape from Monkey Island is an exemplary modern adventure game, superbly executed by Westlake and Aspyr. If you find the adventure genre appealing and have a bit o' the pirate in ye, then set sail for Monkey Island, by hook or by crook.

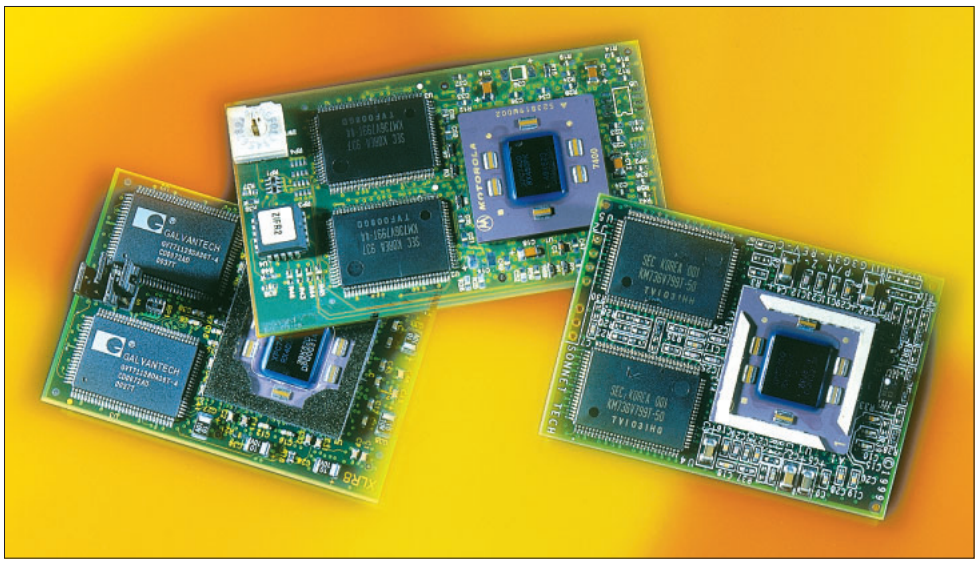
Peter Cohen

Tricks and tips

Avast ye! If you can't find your sea legs in Escape from Monkey Island, try these tricks:

- *Typically, anything Guybrush can pick up is useful, so don't be afraid to grab whatever you find. He has amazingly voluminous pants, apparently, because that's where he keeps everything.*
- *Don't be afraid to talk with others. Often, conversations will get you somewhere, even if at first you feel as though you're wasting your time.*
- *Can't figure out what the old drunken sailor's birthday balloon is good for? Challenge the dart-throwing champ to try to hit it.*
- *Getting out of the bank vault involves wedging open the door frame. Hint: sponges swell when soaked.*
- *Once you get the directions to Pegnose Pete's lair in the Mystes O' Tyme Marshe, write them down. This will make navigation a lot easier. Otherwise you'll be travelling by raft, looking at the map to see where you are, adjusting your course, and trying again until you get there.*

G4 upgrade cards tested and rated



Perhaps you've recently upgraded to Mac OS X, and you notice your once acceptably fast blue-&-white Power Mac G3 beginning to show its age. Luckily, this Mac's 100MHz system bus makes it a prime candidate for a processor upgrade, which can give you nearly top-of-the-line performance. Macworld Lab examined PowerLogix's 450MHz PowerForce G4 ZIF card; Sonnet Technologies' 400MHz and 500MHz Encore ZIF G4 cards; and XLR8's 400MHz, 450MHz, and 500MHz Mach Speed G4 ZIF MPe cards. We found that although these cards performed similarly (relative to their speeds), those from Sonnet and XLR8 offered the most extras.

A G4 processor has a subprocessor called AltiVec (Apple calls it the Velocity Engine), which can dramatically boost performance – but only in applications designed to take advantage of it (such as Adobe Photoshop and some other image-editing programs, MP3 encoders, and video-editing packages). Not many applications are optimized for AltiVec, but if you happen to work with one of them every day, you'll want a G4. And OS X uses the Velocity Engine much more than Mac OS 9 does, so if you're planning to switch to OS X, a G4 upgrade may be in order.

Patchy support

A G4 processor can't work in a blue-&-white Mac without a firmware patch, which modifies the ROM, preparing the motherboard for the upgrade. But, only Sonnet provides a method for removing the patch; you would have to contact the other companies for a removal procedure (at press time, each was developing this procedure and was hesitant to release it).

XLR8 had the best installation package, providing all of the necessary tools and excellent instructions. Sonnet's instructions were also very well written – especially for users with little experience inside a Mac – with clear, descriptive illustrations and a minimum of jargon.

Overclocking

Each card has a 1MB L2 cache that, by default, runs at half the processor's speed. (The L2 cache stores frequently used instructions, allowing the processor to operate with greater efficiency.) All the cards come with software that monitors the cache, but the amount of control provided differs from company to company. PowerLogix and XLR8 provide control panels, but XLR8's gives you more control over the cache's speed and other performance parameters. Additionally, XLR8's control panel checks the cache and sets it to the fastest possible settings – even if they exceed the default settings – automatically and reliably. Sonnet's software is invisible to the user and sets the cache settings to the proper speed during start-up. If you don't intend to experiment with overclocking – driving the cache to a higher speed than is recommended, to squeeze out more performance – Sonnet's arrangement will be preferable.

XLR8's 450MHz Mach Speed G4 ZIF MPe had a slightly better Speedmark score than PowerLogix's 450MHz PowerForce G4 ZIF; however, the difference was negligible – the Mach Speed beat the PowerForce by only a second when performing a Gaussian blur in Photoshop, and it even fell a few seconds behind when encoding an MP3 in SoundJam. The performance of both 450MHz upgrade cards was close to that of the 450MHz Power Mac G3 in our Speedmark and Quake III tests, but the upgrades' speeds far exceeded the G3's when it came to Photoshop, which is optimized for the G4.

G4 performance

The Speedmark subtest that looked specifically at disk speed confirmed that the Power Mac G4, with an ATA/66 controller and a newer hard drive, has

Macworld LAB TEST

G4 upgrade cards compared

MANUFACTURER	MODEL	STAR RATING	PRICE	PROS	CONS	CONTACT	TELEPHONE	WEB
Sonnet Technologies	Encore ZIF G4 400MHz	★★★★/8.4	£279	Good documentation; flexible firmware package; excellent value.	No tools provided.	Computers Unlimited	020 8358 5857	www.sonnettech.com
XLR8	Mach Speed G4 ZIF MPe 400MHz	★★★★/8.4	£325	Excellent installation package; MP enabled; good software; excellent value.	Firmware-patch uninstaller not included.	Channel Dynamics	0870 607 0540	www.xlr8.com
PowerLogix	PowerForce G4 ZIF 450MHz	★★★★/7.2	£349	Easy to install; offers good performance boost.	Firmware-patch uninstaller not included; no tools provided.	AM Micro	01392 426 473	www.powerlogix.com
XLR8	Mach Speed G4 ZIF MPe 450MHz	★★★★/7.3	£369	Excellent installation package; MP enabled; good software.	Firmware-patch uninstaller not included.	Channel Dynamics	0870 607 0540	www.xlr8.com
Sonnet Technologies	Encore ZIF G4 500MHz	★★★★/8.1	£379	Relatively inexpensive; good documentation; robust firmware-package.	No tools provided.	Computers Unlimited	020 8358 5857	www.sonnettech.com
XLR8	Mach Speed G4 ZIF MPe 500MHz	★★★★/7.4	£489	Excellent installation package, MP enabled; good software.	Pricey; firmware-patch uninstaller not included.	Channel Dynamics	0870 607 0540	www.xlr8.com

All prices include VAT.

much better disk performance than the blue-&-white Power Mac G3, with its slower SCSI hard drive. (The faster disk is part of the reason that the 466MHz Power Mac G4's scores were better than those of the 500MHz upgrade cards.) Even if you upgrade your G3 and your hard drive, you'll be limited by the slower ATA bus.

The upgrades from XLR8 are multiprocessor enabled. If you purchase a 400MHz MPe ZIF, you can use it as one of XLR8's multiprocessor upgrade.

Macworld's buying advice

XLR8's upgrades come with all of the tools you need, and its products can be incorporated into a multiprocessor upgrade later. Sonnet's helpfull documentation and low prices make its upgrades exceptionally attractive. And software that works without intervention, along with easily removable firmware patches, makes Sonnet's upgrade cards excellent choices for those who don't enjoy tinkering with their machines.

The 400MHz cards from these two manufacturers are sensible investments. However, the prices of the faster cards begin to approach those of used or refurbished Apple G4s, which have faster hard drives and CD-ROM drives. The G4 upgrade card from PowerLogix is technically sound, but has no distinguishing features, and its rough documentation makes it less appealing than the others we tested.

David Read

Clocking the Velocity Engine

Best results in test.

Model	Speedmark 2.1 Overall score	SoundJam 2.5.2 MP3 encode	Adobe Photoshop 6.0.1 Gaussian blur	Adobe Photoshop 6.0.1 Unsharp mask	Quake III Normal
Sonnet Technologies Encore ZIF G4 400 MHz	120	2:24	10	14	30
XLR8 Mach Speed G4 ZIFF MPe 400MHz	127	2:21	9	13	32
PowerLogix PowerForce G4 ZIF 450 MHz	128	2:06	9	12	34
XLR8 Mach Speed G4 ZIFF MPe 450MHz	134	2:15	8	12	34
Sonnet Technologies Encore ZIF G4 500 MHz	137	2:02	9	12	33
XLR8 Mach Speed G4 ZIFF MPe 500MHz	140	2:01	8	11	35
Apple Power Mac G3/450	127	3:00	15	18	31
Apple Power Mac G4/466	157	2:02	6	8	46
	Longer is best	Shorter is best	Shorter is best	Shorter is best	Longer is best

Speedmark 2.1 scores are relative to those of an iMac 350MHz (1999), which is asigned a score of 100 for each test. SoundJam scores are in minutes:seconds. Photoshop scores are in seconds. Quake scores are in frames per second. We tested each card in a Power Mac G3/450 (blue-&-white) with Mac OS 9.1, 128MB of RAM, a default system disk cache, and virtual memory enabled. We set displays to 1,024-x-768 pixels and 24-bit colour. We tested MP3 encoding with an audio-CD track that was 9 minutes and 25 seconds long, and converted it using a default setting of 128Kbps in SoundJam. Ł

Macworld Lab testing by Jason Cox.

Quality speakers

SoundWorks Slim500

Manufacturer: Creative Labs
www.europe.creative.com
Distributor: Computer Warehouse (020 8400 1235)
Pros: Magnetically protected; £80 cheaper than harman kardon SoundSticks.
Cons: Satellite speakers can sound reedy; not as pretty as SoundSticks.
Price: £60 (including VAT)
Min specs: Any Mac with sound card offering line-out.
Star Rating: ★★★★★/9.1

If you're looking to buy audio bolt-ons for your Mac, first ask yourself what kind of Mac owner you are. Be honest, now. Are you pathologically compelled to style-coordinate your peripherals and system, and damn the cost? If yes, then don't even bother reading this. Get online and spend £140 (inc VAT) on the ultra-cool SoundSticks (reviewed, September 2000) – because you know you will in the end anyway. If, however, aesthetics take a back seat to value for money, then read on – because it's unlikely you'll find a better deal than the Cambridge SoundWorks Slim500 three-piece speaker system.

Not that the Slim500 is ugly: it's a slightly out-of-prime Diana Dors to the SoundSticks' sex-kitten Bridget Bardo, if you will. This is no bad thing, considering some of the pug-ugly PC sound-systems out there.

The Slim500 consists of two ultra-slim (hence the name) 6W satellite speakers and a 17W subwoofer. The 40mm-high satellites are magnetically protected, so you don't have to worry about performance being affected by where they are placed. Plonk them on top of the monitor if you want. You can hang them on the wall, too, as they come with a detachable stand as well as a wall-mounting socket.

Alone, these matt-silver satellites are way too weedy to meet your desktop-audio needs – which is why they come draped on the tattooed arm of a subwoofer brutish enough to quiver your liver. The sub, says Creative Labs, is "electronically contoured" to give a "deep and resounding bass". I've no idea what the techie jargon means, but the company's sound-quality claims are certainly justified. The sub has a frequency range that starts at 38Hz, which is 6Hz lower than harmon kardon's high-performance iSub (reviewed, May 2000).

To test the system, a colleague ran-up a CD compilation that spanned the musical divide – from acid jazz to the Sound of Music. The subwoofer will handle anything thrown at it, always adding as much depth as it does volume. My only quibble is that, with certain sounds, the satellites can sound reedy and flat by comparison.

Volume is controlled via a "knob on a wire" – and we're not talking Billy Smart's Circus. This little sound-control unit even has a sticky strip, allowing for it to be adhered to a convenient spot. This handiness, though, is undone by the fact that the bass volume-control knob remains on the back of the subwoofer, meaning one still has to clamber under the desk to make adjustments. Why not have dual-controls on the wire? The SoundWorks Slim500 also comes with a two-year warranty.

Macworld's buying advice

My benchmark for the Slim500 is the speaker set-up I have at home: an iSub and two built-in in harman kardon speakers on my iMac DV. There's no comparison – the Slim500 wins hands down – and for just £10 more than the iSub costs on its own. A victory for content over style.

Sean Ashcroft

All white now

Forget the hype about the Sony Vaio and lightweight Windows laptops. Apple's new iBook brushes aside the competition, and – alongside the PowerBook G4 – gives us all the chance to go portable. By Simon Jary

PHOTOGRAPHY: MIKE LAYE

Apple's British whiz-kid head designer Jonathan Ive started out blueprinting baths, basins and WCs for Ideal Standard. (In fact, I believe that my toilet at home is an early Ive.) With Apple's new consumer Mac portable iBook computer, the talented Mr Ive has made a symbolic return to the world of white goods. The iBook is white and very very good.

New iBook vs old iBook

Like most of Ive's creations, Apple's original iBook (which itself looked a bit like a colourful designer toilet seat) won awards aplenty, and sold well. It was the Number 1 consumer portable for many months after its launch back in September 1999. We loved its pixel-sharp 12.1-inch active-matrix TFT screen with millions of colours at 800-x-600-pixel resolution. We adored its innovative handle, its full-size keyboard, AirPort readiness, 300-466MHz G3 processor, and ultra-long battery life.

But we did moan about its meagre RAM (expandable to just 160MB) and the lack of any video-out port. But most of all, we groaned under its 3.1kg (6.7 lbs) weight.

Now, with the all-new model, Apple has maintained or improved the original iBook's plus points and eliminated the negatives.

The new iBook's 12.1-inch active-matrix TFT screen displays millions of colours at a greater 1,024-x-768-pixel resolution. The handle has gone, but the size and weight are down to allow easier under-arm carriage. The G3 is more powerful at 500MHz, and RAM is expandable to a maximum 640MB. Apple claims that battery life can reach up to five hours – an hour down on the first iBook, but more realistic. Apple's even added an RGB Video Out port so that you can mirror your work to an external display or projector. It also retains the TV/VCR-ready AV port.

The addition of a second USB port is welcome. While you could always add an inexpensive USB hub to the original iBook (and still can with this one, of course), two ports offer greater flexibility and portability.

The 10GB hard disk certainly isn't huge, but should suffice for most of its target market. If you need more space, adding a hot-pluggable FireWire hard drive is easy and not too expensive (an extra 10GB drive costs around £230). Best of all, the new iBook weighs just 2.2kg (4.9 lbs) – nearly a bag of sugar less heavy than the old iBook, and 0.2kg (0.5 lb) lighter than even the titanium PowerBook G4.

Weight to go That's not to say that the iBook is as light as a feather – indeed, at that weight you could feed two with the whole chicken. It's at the heavy end of the subnotebook spectrum, with weeny Windows portables getting as low as 1.7kg. Even Apple's old PowerBook Duo (1992-97) and PowerBook 2400 (1997-98; available only in North America and Japan) weighed a little less. But none of these little laptops offer/offered all the iBook does.

iBook vs Windows subnotebooks

Take Sony's range of Vaio slim notebooks. Comparing like with like, we'll compare Apple's iBook with the Vaio Z600 to start with. The Z600 (same size active-matrix screen, 700MHz Pentium 3; 64MB RAM; 15GB hard drive; and Windows 2000) weighs just 1.7kg (or 3.75 lbs), which is half a kilo lighter than the iBook.

However, to keep its weight down to this level, Sony has left out the optical-media drive. If you want a CD-ROM drive, you'll need to buy a special docking station that not only adds the difference in weight, but makes it more cumbersome by including external extras. And, right now, a CD-ROM is your only option. If you want CD-RW, DVD-ROM or a combination of both, you must buy an external, third-party drive – adding further pounds to both weight and cost.

Where the everything-built-in iBook costs from £1,099 (inc. VAT), the Vaio costs a whopping £1,699 with 16x CD-ROM only. And its estimated battery life is just two-and-a-half hours – half that of the iBook. To reach the iBook's battery charge life, you need to buy a spare battery to swap in – you've guessed it, that means more cost (about £270) and extra weight.

Sony does have a couple of laptops that beat the iBook on price. The £880 Vaio FX101 (600MHz Celeron processor; 64MB RAM; 10GB hard drive; but no built-in ethernet; Windows ME) even has a slightly larger screen (13.3 inches), although its maximum resolution (1,024-x-768 pixels) is the same as the iBook's. This time, the 24x CD-ROM is built-in, but you'll have to buy an external, third-party drive if you want CD-RW or DVD. And the FX101's battery life still lags two hours behind the iBook's, without any option of swapping batteries between recharging. Oh, yes, it weighs a fifth more than the iBook...

Sony's other option is its quirky new £979 QR10 laptop (650MHz Celeron; 64MB RAM; 10GB hard drive; Windows Me), which has taken a note from Apple's original iBook on 'think different' looks and its carry-handle. Like the other comparable PC laptops, this is available with CD-ROM only. Other failings include its 3kg weight (as heavy as the original iBook) and 2.5-hour battery life.

Sony's obviously consumer-targeted QR10 has borrowed elements of Apple's first iBook. The case looks quite smart, and maybe less like a toy than 1999's iBook – although I think it looks like a giant metal pencil case. Oddly, the keyboard is toy-like, and nothing like as smart as either the original or new iBook.

Also, Sony equips its Vaios with 4-pin FireWire connectors – so if you want to add external storage (like LaCie's PocketDrive), you have to add an extra power supply. Macs boast the 6-pin connector that supplies power as well as data. Portability isn't just the weight of the machine, it's all the other stuff you have to carry round with you.

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Consumer portable

iBook (CD-ROM)

Manufacturer: Apple (0800 039 1010) www.apple.com/uk
Pros: Small; lightweight; inexpensive; all the connections you need; free software, including Mac OS X; smart looks.
Cons: Slowest iBook; limited RAM and cache.
Price: (inc. VAT) £1,099
Star Rating: ★★★★/8.6

iBook (DVD-ROM)

Pros: Small; lightweight; inexpensive; all the connections you need; free software, including Mac OS X; DVD video capability; smart looks.
Cons: No speed merchant; small cache.
Price: (inc. VAT) £1,299
Star Rating: ★★★★/8.7

iBook (CD-RW)

Pros: Small; lightweight; inexpensive; CD-RW capability; all the connections you need; free software, including Mac OS X; smart looks.
Cons: No speed merchant; small cache; available from online Apple Store only.
Price: (inc. VAT) £1,399
Star Rating: ★★★★/8.7

iBook (DVD/CD-RW)

Pros: Small; lightweight; inexpensive; CD-RW and DVD video capability; all the connections you need; free software, including Mac OS X; smart looks.
Cons: No speed merchant; small cache.
Price: (inc. VAT) £1,599
Star Rating: ★★★★/8.7

And don't forget Apple's AirPort (IEEE 802.11) technology that gets you fast wireless networking and Web browsing up to 150ft away from your phone line or ethernet hub or router.

No compromise vs flexibility Like the PowerBook, the iBook comes fully loaded: ethernet; CD, DVD, CD-RW or CD-RW/DVD combo; USB; FireWire; modem; Video Out; AV, etc. Adding all this stuff takes the Windows equivalents way over the 2.2kg barrier. And the iBook costs a whole lot less.

Of course, there's something to be said for the PC laptops' flexibility. If you don't need an optical drive, Vaio Z600 users can leave it at home or in the office, and lug a lot less dead weight around. Apple doesn't want to go down this route, as it believes that none of its machines should be "compromised". In any case, for the money, Apple's new iBook is as light as any of today's fully specified laptops – and it's not even Apple's pro system.

iBook vs PowerBook

In fact, many Mac professionals will prefer the iBook to the PowerBook. The PowerBook is super-fast and features super video, but is it worth the weight?

Performance Creative pros should plump for the lump. The PowerBook's extra half a pound is certainly worthwhile for the additional performance boost guaranteed by the G4 processor. Macworld Lab tests point to the 400MHz PowerBook G4 being at least 22 per cent faster than the new iBook, and the 500MHz PBG4 as 37 per cent faster. See the above table "Mac portable performance" for more.

The latest PowerBook's AltiVec-optimized G4 processor counts for much of this extra oomph, but one of the new iBook models really fell to the floor during our speed tests.

Mac portables: performances compared

Best results in test.

	Speedmark 2.1	Quake 3 Time demo	SoundJam 2.5.2 MP3 Encode
iBook 466MHz 64MB DVD	100	22.0	3:21
PowerBook G4 400MHz	122	31.6	2:13
iBook 500MHz CD-ROM	93	23.3	3:19
iBook 500MHz 128MB DVD	101	25.9	3:17
	Longer is better	Longer is better	Shorter is better

Speedmark 2.1 scores are relative to an iMac 350MHz (1999), which is assigned a score of 100. Quake III scores are in frames per seconds. SoundJam scores are in minutes:seconds. We tested each system with Mac OS 9.1, a default system disk cache, and Virtual Memory enabled, and displays set to their native resolution and 24-bit colour. We tested Quake III v1.17 Time Demo 1 at a resolution of 640-x-480 pixels, with graphics set to Normal. We tested MP3 encoding with an audio-CD track that was 9 minutes and 25 seconds long and converted it using a default setting of 128Kbps.

– **Macworld Lab testing by Jim Galbraith and Jason Cox**

The iBook (with 64MB of RAM) took almost twice as long as the 128MB iBooks to complete the Internet Explorer part of the Speedmark test. This isn't down to the rather limited memory, as the older 64MB/466MHz iBook SE came in at just under the score of the new 128MB/500MHz iBook.

Our tests revealed that one reason for the slower speeds on the new CD-ROM drive is that it has a 128K buffer size compared to the 512K buffer of the older drives. That all the new iBooks (and those that preceded it) score around the

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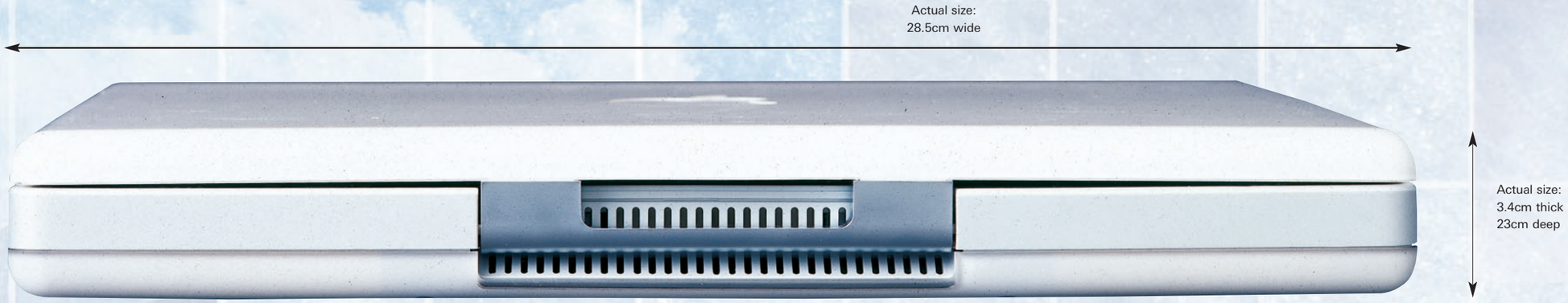
Consumer rival

Sony's think-different QR10 Vaio Windows notebook took lessons from Apple's first iBook, but also weighs as much at 3kg.



CD-ROM, DVD or CD-RW

Your choice of optical-media drive comes down to what you want to use your iBook for… and price. There are two DVD-ROM and DVD-Video options (one with CD-RW as well), a CD-RW model, and the entry-level system that has CD-ROM only.

Because there are recordable options, the drive is tray-mounted – which isn't as attractive and safe as the PowerBook's slot-loading drive, but is pretty robust all the same.

same as 1999's 350MHz iMac despite much faster G3 chips is down to the simple matter of less cache. The older iMac had 512K level-2 cache (for speedy storage of frequently used data, to save the system constantly trawling for that data between hard disk, RAM and processor); the iBooks have half that amount, at 256K.

Clearly, the new iBook is no speed merchant, although its performance should be ample for nearly all consumer and education-oriented operations. But it is definitely not for graphics or video pros. iMovie performance is fine; Final Cut Pro's isn't.

Screen size While the iBook's smaller screen size won't bother those who use Word and a Web browser as their mainstays, graphics and video professionals will greatly appreciate the PowerBook's 15.2-inch widescreen display. The iBook's 1,024-x-768-pixel resolution is actually quite spacious, but the PowerBook's 1,152-x-768 supplies much-needed space for those palette-crazy applications.

If the native 1,024-x-768-pixel resolution of the screen makes icons and text too small for you, note that all lower resolutions have to be created via pixel interpolation – small pixels emulating larger pixels – and the results can be blocky and fuzzy.

Video The AV port lets you show your movies and presentations to best effect on a big-screen TV. If you have one of the DVD iBooks, you can watch your DVD movies via the iBook as well. However, if you want to watch a lot of DVDs at home – on a long-haul flight is another matter entirely – we'd recommend a separate DVD player and home-cinema system.

The PowerBook's S-Video output port is also superior to the iBook's AV port. S-Video separates information into two signals: Chrominance (which separates colour information); and Luminance (brightness). This prevents colour bleeding and dot crawl, and increases clarity and sharpness. For most of us, though, the iBook's AV port will easily be sufficient.

Memory Heavy-duty applications require a stack of memory, as well as a G4 processor. The PowerBook comes with at least 128MB of RAM, expandable to 1GB. The entry-level iBook comes with 64MB of RAM, which really requires an immediate upgrade to at least 128MB – especially if you're considering upgrading to Mac OS X in the near future. (See "Extra value and extra costs" below).

Size With its smaller screen, the iBook can be a lot littler than its pro sibling. In fact, the iBook is only slightly larger than its (12.1-inch diagonal) screen. It's 28.5cm wide (compared to the PowerBook's 34.1cm), and 23cm deep (PB: 24.1cm). This makes the iBook even better than the PB G4 for air travel work and play.

The PowerBook is skinnier, however: 2.6cm (1 inch) thin compared to the iBook's 3.4cm (1.35 inches). Due to the CD-RW drive requiring a tray-loading drive, the iBook cannot take advantage of the PowerBook's thinner slot-loading mechanism. (This is also the reason that Power Macs still have the tray-loaded CD drive; so roll on slot-loading rewriteable CD drives.)

Input/output The iBook boasts the same full-size keyboard and trackpad as the PowerBook, so there's no loss of comfort due to the tiny footprint. Two magnets at the leading edge of the keyboard (closest to the screen) ensure the keyboard is nice and firm, so there's none of that spongy nonsense you often get from laptop keyboards.

Above the keyboard, on either side, are built-in stereo speakers. The sound is pretty good, and you can always add Harman Kardon's £139 SoundSticks (with iSub) for the full iTunes audio experience at home.

Like the PowerBook's, the new iBook's trackpad is a lot more robust and responsive than the original iBook's. The addition of a built-in microphone is also a bonus, although a separate USB-based mic is still the superior option.

Sound The iBook's stereo speakers are a big improvement on the original's, and are even noticeably clearer than even the PowerBook G4's.

Optical media

The new iBook comes as just one G3 speed: 500MHz. The options are all to do with memory (see above) and types of optical-media drives. Your drive choice will also affect speed (see above), but not by enough to worry you greatly.

The low-end model (£1,099 inc. VAT) has a CD-ROM drive built-in. This should suit most users, but those who want to watch movies on long-haul flights or even longer-haul short British train journeys should splash out the extra £200 on the DVD-ROM model. As you're likely to be on the move a lot, you may find yourself in need of removable recordable media for those situations when email and FTP just won't stretch. Here, Apple provides you with two options. There's a CD-RW model for £1,399, and a £1,599 CD-RW/DVD-ROM combo model that lets you watch (not burn) DVD movies and record CD-RW and CD-R discs.

If there's any chance that you'll require a DVD system, then go for either of the DVD solutions now – as Apple's software doesn't support movies on external DVD drives. You can buy the CD-ROM version and add an external CD-RW (rather slow USB versions from around £200; better FireWire versions from £269) easily enough. But internal is always best for true portability, so stump up for the built-in 8-speed CD-RW if you possibly can.

Extra value and extra costs

Free software Every iBook will ship with both Mac OS 9.1 and OS X (previously on sale separately for £99) installed. 9.1 will be the default operating system, but you can boot in X whenever you want to.

Consumers who just use iMovie, iTunes and AppleWorks (all of which have been optimized for OS X) could go with the next-generation operating system fulltime if their printer, scanner and other peripherals are also supported – check with the manufacturers before going all-out X.

Of course, the iBooks also ship with Apple's easy-to-use iMovie 2 digital video editor, which works alongside a camcorder's FireWire (also known as i.Link and IEEE 1394) connection. iTunes 1.1.1 is also free and bundled with the iBooks. This digital-music jukebox software lets you make MP3 playlists, rip music from CDs, and (with a CD-RW drive) burn your own music CDs, as well as graphically visualize the music as it plays. AppleWorks 6 is a suite of business applications (word processor, spreadsheet, presentations, database, graphics) that is also bundled, alongside Web browsers and email clients from Microsoft and Netscape.

Cro-Mag Rally, Bugdom, Nanosaur are the free fun games included alongside the more serious stuff.

Cables Unlike the PowerBook G4, the iBook doesn't come with a FireWire cable. Buying one of these costs about £25. And the iBook requires a special £15 AV cable to connect to your TV or VCR.

RAM If you buy the CD-ROM model, plan on buying at least an extra 64MB of RAM (to take it to 128MB). This will cost you £80 (inc. VAT) at the online Apple Store, but just £28.50 from Crucial Technology (**www.crucial.com/uk**); alternatively, call around the mail-order dealers at the back of *Macworld*, making sure that you state that it's for the 500MHz iBook.

The base RAM (either 64MB or 128MB) is soldered to the logic board, leaving one free DIMM slot for adding extra. This single free DIMM slot means you're better off buying as large a RAM DIMM as possible now rather than a 64MB one now and having to replace that later with a larger one. Crucial is offering a 256MB DIMM (to add to the 64MB or 128MB) for £122.

Design

Strength One of the strong points of the original iBook was its robust casing, which had co-moulded rubber bumpers to save its exposed edges from the usual knocks and bumps consumers and students subject laptops to. Despite the lack of rubber bumpers, Apple claims that this new iBook is twice as durable as the old iBook.

The new case is made from "impact-resistant" polycarbonate plastic. Inside, it's further strengthened with a magnesium frame, which adds sturdiness and reduces weight. To give the iBook even greater "bump tolerance", Apple rubber-mounts the hard drive. As with the original iBook, there are no protruding latches or levers to snap off. Sadly, the handle has gone – but it's fairly easy to tuck under your arm when walking about, and now looks less like a plastic handbag.

A primary hinge (see above) connects the top and bottom of the case. The firm, thick hinge swings the screen back and down, behind the computer's back edge, which lowers its overall height when open.

Apple's new iBooks – they've got the lot

Model	Price inc. VAT	PowerPC processor	Base RAM	Max RAM	Hard disk	USB ports	Fire Wire	Ethernet	56Kbps modem	Screen type and size
iBook 500 CD-ROM	£1,099	500MHz G3	64MB	576MB	10GB *	2	1	10/100	Yes	12.1" TFT
iBook 500 DVD-ROM	£1,299	500MHz G3	128MB	640MB	10GB *	2	1	10/100	Yes	12.1" TFT
iBook 500 CD-RW	£1,399	500MHz G3	128MB	640MB	10GB *	2	1	10/100	Yes	12.1" TFT
iBook 500 CD-RW/DVD	£1,599	500MHz G3	128MB	640MB	10GB *	2	1	10/100	Yes	12.1" TFT

* 20GB option available on online Apple Store, for an extra £169 (inc. VAT).

Looks Apple has whitewashed its fancy colour policy with this new system. Its milky-white case is interrupted only by a metallic-grey band that's sandwiched between the near-featureless top and bottom casing. There are a few features to the otherwise minimal round-edged case. There's a glowing crystal Apple logo that sits the right-way up when facing away from you, and a pulsing light sleep light embedded in the central grey strap.

The colour (or rather lack of it) is reminiscent of the now-discontinued Snow iMac. As a portable, it's bound to get scratched, but these don't stand out as much as they would have on a coloured plastic case.

The iBook also shares the same magnetic catch, and the rounded metal release button.

Battery bonus

As with the original iBook, the battery is mounted in the bottom of the unit. But, thankfully, the new battery is smaller and a lot easier to remove via a single coin screw instead of two. A series of LEDs tells you at a glance how much charge the iBook has left.

Macworld's buying advice

The new iBook has real consumer pulling power due to its lightweight, cute case. And, unlike the old iBook, it can also pass as a pro laptop. With its fully ticked list of technical specifications, the iBook is perfect for people who want to start making digital home movies, playlist their own CDs and get connected to the Internet – as well as move their computer around with them whenever they want.

And the RGB video output lets you mirror your work to a larger external display or projector, when you based in your home, school, or office.

Forget the hype about cheaper, lighter Windows equivalents – none can match Apple's iBook on features per pound (both in cost and weight). Graphics pros (and serious lightweight metal heads) should still pay the extra for the speedier, larger-screened titanium PowerBook, but the rest of us should praise the fact that, after years of waiting, we all now have the option to go portable. **MW**

Hi-res flats

Flat-panel LCD monitors assessed and rated.

By David Fanning

When we ran the LCD flat-panel round-up a couple of years ago, prices were in freefall – so much so that it seemed possible most future displays made would be LCDs – and that traditional CRT (Cathode Ray Tube) displays were on the way out. However, soon after that feature, prices again started climbing, and soon, flat-panels were prohibitively costly. Well, it's déjà vu all over again – as Big Ron would say – because LCD displays are better and more affordable than ever.

This is great news for everyone bar hard-

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PHOTOGRAPHY: MIKE LAYE

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Apple 15-inch Studio Display

If you're suffering from Cinema Display-envy, this Studio Display is the more affordable option – it's now only £449. Cube owners have plenty of reasons to complete the desktop décor with a Studio Display. However, if you want an LCD display without the frills and leading-edge design, then you can get something cheaper – but not nearly as pretty.

Company	Apple
Model	Studio Display
Screen	15 inches
Resolution	1,024-x-768 pixels
Connection	ADC
Extra features	None
Price	£449
Contact	Apple www.apple.com/uk 0800 039 1010

Image quality	10
Design/control	9
Value	9
Star Rating	★★★★★/9.1

Iiyama TXA3834MT

While the 15-inch Iiyama just misses out to others on being the cheapest available screen, it has many extras that the NEC cheapie lacks. These include a four-port USB hub and speakers, as well as the ability to pivot to portrait mode. The only problem is that the Apple Studio Display is now £65 cheaper – something that makes the choice for you.

Company	Iiyama
Model	TXA3834MT
Screen	15 inches
Resolution	1,024-x-768 pixels
Connection	VGA
Extra features	Four-port USB hub; speakers
Price	£515
Contact	Iiyama www.iiyama.co.uk 01438 745 482

Image quality	7
Design/control	7
Value	7
Star Rating	★★★★/7.3

Maxdata Belinea 10 15 15

Plain, simple and to the point, this 15-inch Belinea is much the same as its larger counterpart. It won't win any beauty competitions, but will blend into most surroundings with no trouble. Its front-mounted controls are simple to navigate, but – like the Nokia 530L – its auto set-up function failed to produce a perfect picture. This was achieved only with manual adjustments.

Company	Maxdata
Model	Belinea 10 15 15
Screen	15 inches
Resolution	1,024-x-768 pixels
Connection	VGA
Extra features	None
Price	£399
Contact	Maxdata www.maxdata.co.uk 01344 788 900

Image quality	7
Design/control	6
Value	9
Star Rating	★★★★/7.7

NEC MultiSync LCD 1530V

There's no major difference between this bargain £399 model and many of the others at almost twice the price. The Apple models and the LG screen may have extra features, but their image quality and resolution is just the same. It's design may be plain, but it's the first time I've seen an LCD that can compete with a CRT on price. But Apple is closing in on value.

Company	NEC
Model	Multisync 1530V
Screen	15 inches
Resolution	1,024-x-768 pixels
Connection	VGA
Extra features	None
Price	£399
Contact	NEC www.nec-monitors.com 0870 120 1160

Image quality	8
Design/control	7
Value	9
Star Rating	★★★★/8.3

Samsung SyncMaster 150MB

The SyncMaster seems overpriced for a 15-inch LCD display – but the reason for the extra outlay is its built-in TV tuner. This means that, during your lunch hour, you can watch *Neighbours* while you eat your lunch. For the money the 150MB costs, you could buy both a television and a monitor, but you would need a larger desk to hold them.

Company	Samsung
Model	SM150MB
Screen	15 inches
Resolution	1,024-x-768 pixels
Connection	VGA, S-video, RCA video; speakers; remote control; video inputs
Extra features	
Price	£880
Contact	www.samsungelectronics.co.uk, 0800 521 652

Image quality	8
Design/control	9
Value	7
Star Rating	★★★★/8.3

Sharp LL 1510A

The price of this quality 15-inch screen's is comparable with that of the Apple 17-inch Studio Display's – but it doesn't even come close on specs or styling. If you've a Studio Display-compatible Mac, the choice is a no-brainer. The Sharp isn't even a clear-cut choice for owners of older Macs, as there are cheaper screens that offer the same specs.

Company	Sharp
Model	LL1510A
Screen	15 inches
Resolution	1,024-x-768 pixels
Connection	VGA x2
Extra features	Two-port USB hub
Price	£699
Contact	Sharp www.sharp.co.uk 0800 138 8879

Image quality	8
Design/control	7
Value	6
Star Rating	★★★/6.4

ViewSonic ViewPanel VP150m

This cost of this plain, 15-inch screen that incorporates speakers wouldn't have seemed high a few months ago – but now it's £200 more than the NEC 15-inch model, and even more expensive than the Studio Display. However, one thing to consider is that, with an LCD price war widely expected (see "IBM strikes while ion is hot") the ViewSonic may well come down in cost.

Company	ViewSonic
Model	VP150m
Screen	15 inches
Resolution	1,024-x-768 pixels
Connection	DVI, VGA
Extra features	Speakers; pivoted screen
Price	£599
Contact	ViewSonic www.viewsoniceurope.com 0800 833 648

Image quality	7
Design/control	7
Value	5
Star Rating	★★★/6.5

ELO TouchSystems

This model differs from all others on test because it's a touch-screen display, making it ideal for interactive-booth installation. The software needed an update – available from ELO's Web site – before we got it working. Screen quality is OK, but the touch-screen feature makes the screen more reflective than is desirable, making it unsuitable for everyday use.

Company	ELO
Model	Touchscreen
Screen	15.1 inches
Resolution	1,024-x-768 pixels
Connection	VGA
Extra features	Touch-screen; speakers
Price	£809
Contact	ELO www.elotouch.co.uk 01793 573 344

Image quality	6
Design/control	7
Value	7
Star Rating	★★★/6.9

Product scores

Bar-chart quality scores run from 0-10, and reflect specific aspects of performance. Star Rating is an overall score, encapsulating these individual scores, plus any other factors relevant to your choice of purchase.

core designers, who are likely to stick with CRTs come what may because of their superior colour fidelity. LCDs can fall down on colour-critical work because the viewing angle affects the colours displayed. However, with good hard-copy proofing, there's no reason at all why a decent-quality LCD can't figure in professional workflow situations.

Figuring what constitutes quality in an LCD monitor is a tough task for the uninitiated, because LCD displays are still relatively uncommon compared to CRTs. For this Test Centre, we secured 26 models from 15 manufacturers. We tested them head-to-head to determine which ones most successfully produce the best blend of price and performance.

Digital or analogue?

Unlike CRT monitors, LCD screens are digital rather than analogue. Until recently, most computers had only analogue output to control CRT monitors. Now, desktop Macs have acquired a digital output, but in a format incompatible with most digital screens – except, of course, Apple's own. This isn't an insurmountable problem, as there are adaptors available, but it adds another level of complication.

While LCD screens are inherently digital, they usually sport an analogue connection so that they're compatible with the majority of computers. This year, more screens than ever offer both a digital and analogue connection.

Flicker of hope

Sorting out the wheat from the chaff is a little different for LCDs than for CRTs. For example, refresh rate – a good measure of the capabilities of a CRT monitor – is entirely irrelevant with LCD screens. Flat-panels don't suffer from flicker, because the image doesn't scan down the screen as it does with traditional monitors. Instead, it appears instantly. Once a pixel is illuminated on an LCD, it remains – as opposed to fading after the cathode ray has passed by. The result is a screen that remains flicker-free, even at miserly refresh rates of 60Hz.

Resolution

Resolution is also handled differently in flat panels. There are a set number of pixels, and, although you may be able to display different resolutions, they must all be translated into the native resolution. This might work well enough with pictures, but text will always look bad if displayed at a resolution that isn't the native one. If you

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IBM strikes while ion is hot...

IBM has uncovered a cost-cutting manufacturing process for LCDs (liquid crystal displays). Traditional LCD-manufacture uses velvet to align liquid crystals on the substrate. The polymer on the substrate is rubbed with a velvet cloth, and when the crystals are formed, they align themselves with the direction the velvet was rubbed. This method, though, means that there is a high failure-rate of screens.

The new technique involves aligning crystal molecules inside flat-panel LCDs, a principle called atomic beam alignment (ABA). This involves a non-contact atomic-beam being used to align the crystals. Instead of a polymer substrate, the method relies on a thin layer of carbon, which is bombarded with ions, pushing aside many of the surface carbon atoms.

ABA means IBM will begin making higher-quality, higher-resolution LCD displays next year. Because the failure rate will be lower, prices should be lower too.

IBM holds the patent for ABA, but is likely to license the technology to other manufacturers.

15.1 inch ▶

LG Flatron FL885

For the second time this year, LG has surprised us with a beautifully designed screen. It's elegant and has plentiful additional features. The best of these is the built-in TV tuner. The Macworld Test Centre is in a basement and there's no TV signal – but we tested it on a video and it worked well. One downside is that the FL885's auto set-up feature was slightly off-mark.

spec	
Company	LG Electronics
Model	Flatron FL885
Screen	15.1 inches
Resolution	1,024-x-768 pixels
Connection	DVI, VGA SCART and Video
Extra features	TV tuner; remote control
Price	£899
Contact	LG Electronics www.lge.co.uk 0870 607 5544

score	
Image quality	8
Design/control	10
Value	7
Star Rating	★★★★/8.6

Nokia 530L

The Nokia is nicely compact and neatly designed. Its menu system is easy to navigate, although the auto-adjustment feature did fail to produce a perfect picture. This was only achieved by fiddling with the width and sharpness controls. Although it has some attractive extras – such as built-in speakers – its price is now out of step with the NEC and Apple prices.

spec	
Company	Nokia
Model	530L
Screen	15.1 inches
Resolution	1,024-x-768 pixels
Connection	VGA digital
Extra features	Speakers
Price	£649
Contact	Viewsonic www.viewsoniceurope.com 0800 833 648

score	
Image quality	8
Design/control	7
Value	6
Star Rating	★★★★/7.2

17.3 inch ▶

Sony SDM-N50

Although the SDM-N50 is a year old, it still looks as fresh and as high-tech as ever. The screen-image on its ultra-thin screen looks good from any angle, and it is a viable alternative to the Apple Studio Display. The price has fallen £300 from last year, but the 15-inch Studio Display has dropped even further – making it a no-contest until Sony drops its prices even further.

spec	
Company	Sony
Model	SDM-N50
Screen	15.1 inches
Resolution	1,024-x-768 pixels
Connection	VGA x2
Extra features	Speakers
Price	£799
Contact	Sony www.sony-cp.com 08705 424 424

score	
Image quality	9
Design/control	10
Value	6
Star Rating	★★★★/8.4

Silicon Graphics 1600SW

Although this model is long in the tooth, it holds up well against the competition. Its wide-screen format is great for displaying video or graphics apps that involve a multitude of palettes. It is compatible only with the included Formac Proformance III card. This is something of a drawback, as the Proformance is slower than the latest 3D video-cards.

spec	
Company	SGI
Model	SGI 1600SW
Screen	17.3 inches
Resolution	1,600-x-1,024 pixels
Connection	Digital
Extra features	Proformance III card
Price	£1,545
Contact	Formac www.formac.co.uk 020 8533 4040

score	
Image quality	9
Design/control	7
Value	6
Star Rating	★★★★/7.5

17.4 inch ▶

Iiyama AS4431D

The Iiyama is dumpy compared to some of the supermodel screens on test. However, for the price, you get a full 17.4-inch screen with 1,280-x-1,024 resolution, a four-port hub, speakers, and video input. It's dull, but for the money, offers much. But you could save around £200 by buying the slightly smaller 17-inch Studio Display.

spec	
Company	Iiyama
Model	AS4431D
Screen	17.4 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA, DVI, video
Extra features	Four-port USB hub; speakers; video inputs
Price	£895
Contact	Iiyama www.iiyama.co.uk 01438 745 482

score	
Image quality	8
Design/control	7
Value	9
Star Rating	★★★★/8.3

Taxan CrystalVision 780

The 780's 17.4-inch screen offers the same amount of pixels as its larger sibling – the 880 – but in a smaller space. Its price is lower too, and, considering its identical resolution, it's a bargain compared to the 880. The only drawback is that, using its high resolution, means desktop icons become smaller. The £200 saving on the bigger model is worth every penny.

spec	
Company	Taxan
Model	CrystalVision 780TCO99
Screen	17.4 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA x2
Extra features	Four-port USB hub
Price	£949
Contact	Taxan www.taxan.co.uk 01344 484 646

score	
Image quality	7
Design/control	7
Value	8
Star Rating	★★★★/7.6

ViewSonic ViewPanel VG175

The ViewPanel offers simple, well-designed controls on a screen that sits in a clean-looking light-grey case. It has dual inputs that are easily switchable – something that should prove popular with Web designers who own more than one machine. This is a 17.4-inch model, and compares very favourably on price with the cost of models in the 18.1-inch category.

spec	
Company	ViewSonic
Model	VG175
Screen	17.4 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA x2
Extra features	Pivot
Price	£899
Contact	Viewsonic www.viewsoniceurope.com 0800 833 648

score	
Image quality	7
Design/control	7
Value	9
Star Rating	★★★★/7.9

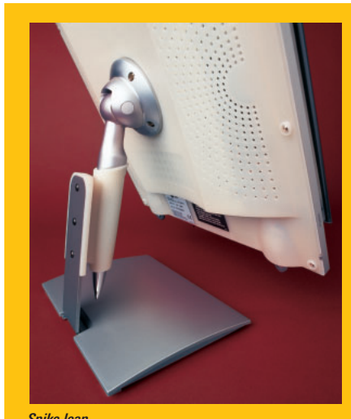
18 inch ▶

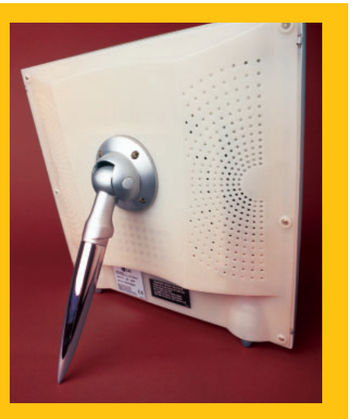
LaCie Photon18blue

LaCie previously considered the available LCD technology insufficient for colour work – but its LCD debut, the Photon, is an excellent screen, and even sports the removable reflection-hood that its CRT models sport. There will also soon be a version of the BlueEye calibrator available for the Photon, giving maximum colour-control – a first for LCD screens.

spec	
Company	LaCie
Model	Photon18blue
Screen	18 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA, DVI-to-ADC
Extra features	Hood; BlueEye colour calibrator to follow.
Price	£1,499
Contact	LaCie www.lacie.com 020 7872 8000

score	
Image quality	9
Design/control	7
Value	7
Star Rating	★★★★/7.8





Spike lean

LG's Flatron can either rest on the spike at the back, or with the spike in a stand. Either way, it looks fantastic.

are used to seeing icons at a particular size on a CRT, you may be in for a shock with an LCD. Because traditional monitors have variable resolutions, you can change this to suit your preference. If, however, you're an early adopter of Mac OS X, then this is not a problem, as OS X allows icons to be resized to your requirements. The simplest thing to do is pay for the biggest screen-resolution you can afford. If your eyes aren't up to looking at tiny icons, then go for a larger screen – or perhaps try out OS X.

Size does matter

Screen size is one thing that is easier to understand with flat panels than CRT displays. With traditional displays, the size of the tube is what the model will be sold on – with the actual viewable-area size appearing only in small print. LCD displays give you only the diagonal screen-measurement, so only the viewable area is measured. When comparing LCD with CRT sizes, be sure to compare the viewable areas.

A question of control

When a digital display has an analogue input, there will be some tweaking involved to line-up the image with the correct pixels. Without this tweaking, greys and fine vertical-lines can become noisy and distort text. Many screens have an auto-adjust feature to take care of this, although sometimes you can do a better job by doing it manually. Consequently, good adjustment controls – particularly for this feature – are important.

Colour critical

Apple claims its screens are fine for high-end colour work, but only recently have there been tools to accurately calibrate LCD monitors. So, how do LCD screens compare to CRTs for colour accuracy?

The theory that LCDs are better than CRTs for colour pivots on the fact that they're much brighter. An uncalibrated LCD such as the Cinema Display has luminance of 180 candelas, compared with a CRT – such as the LaCie electron 22 – which outputs a white luminance of 158 candelas. The Barco range of CRTs are set to a conservative 75 candelas, though Barco claims to be able to hold this calibrated state for three years.

Calibration by necessity lowers the raw output of a screen, be it LCD or CRT, and the Cinema Display was dramatically reduced in brightness to 108 candelas. The LaCie electron went down to 103 candelas, but, because the blacks on a CRT screen are darker than with an LCD, the contrast range is comparable.

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18.1 inch ▶

Eizo FlexScan L675
This 18.1-inch screen offers a much thinner border than most of the other screens on test, making for a noticeably smaller case. The swivel-action screen can be twisted for portrait viewing, and it has dual digital-connections that can double as analogue connections. Add to this the fact that the auto-settings button works perfectly, and you've got a top flat panel.

specs	
Company	Eizo
Model	L675
Screen	18.1 inches
Resolution	1,280-x-1,024 pixels
Connection	DVI/VGA x2
Extra features	Four-port USB hub; speakers; screen pivot.
Price	£1,439
Contact	Eizo www.eizo.co.uk 01483 719 500

score	
Image quality	9
Design/control	8
Value	7
Star Rating	★★★★/8.2

Maxdata Belinea 10 18 10
Another light-grey cased screen that is simplicity itself. However, this 18.1-inch screen offers the same resolution as the 17.4-inch models, so you don't get any extra screen real-estate. In light of this, the cost of that extra inch is quite high, but not as high as most of the other 18.1-inch models. If you need the extra inch, this is a fair choice from the 18.1-inch category of flat-panels.

specs	
Company	Maxdata
Model	Belinea 10 18 10
Screen	18.1 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA, video
Extra features	Speakers
Price	£1,099
Contact	Maxdata www.maxdata.co.uk 01344 788 900

score	
Image quality	8
Design/control	6
Value	9
Star Rating	★★★★/7.8

NEC MultiSync LCD 1850DX
Functionally, this model is similar to the Eizo 18.1-inch model. It has dual inputs, either of which can be used in digital or analogue mode. It also shares the same narrow border, which makes for a smaller, neater screen, and has the ability to swivel. The only real difference is that its software support is a bit flaky. Otherwise, it is an excellent and well-presented screen.

specs	
Company	NEC
Model	Multisync 1850DX
Screen	18.1 inches
Resolution	1,280-x-1,024 pixels
Connection	DVI/VGA x2
Extra features	None
Price	£1,649
Contact	NEC www.nec-monitors.com 0870 120 1160

score	
Image quality	8
Design/control	7
Value	7
Star Rating	★★★★/7.6

Nokia 800 Pro+
At 18.1 inches, this screen is the big brother of the 503L. It looks the same as the 503L – boasting a wheel-controlled menu for settings – and also incorporates a USB hub and front-mounted speakers. Although its price is reasonable compared to most 18.1-inch screens with dual digital-inputs, a 17.4-inch screen still offers similar specs at a much lower price.

specs	
Company	Nokia
Model	800 Pro+
Screen	18.1 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA digital
Extra features	USB hub; speakers
Price	£1,749
Contact	Viewsonic www.viewsoniceurope.com 0800 833 648

score	
Image quality	8
Design/control	7
Value	7
Star Rating	★★★★/7.5

19.6 inch ▶

Sharp LL-T1810SA
The T1810 is a luxuriously big screen, yet looks "light on its footprint". The styling is clean, if not head-turning, and it offers a built-in two-port hub. This adds to the clean lines, by discreetly connecting your mouse. One thing that most 18.1-inch screens include that this model lacks is a digital interface. This would be a useful addition. The price is high, considering the features.

specs	
Company	Sharp
Model	LL-T810SA
Screen	18.1 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA x2
Extra features	Two-port USB hub
Price	£1,899
Contact	Sharp www.sharp.co.uk 0800 138 8879

score	
Image quality	8
Design/control	7
Value	6
Star Rating	★★★★/7.5

Taxan CrystalVision 880
The CrystalVision's cabling is hidden neatly at its rear, adding to its sleekness – although packing them in to the tight allotted space was not plain sailing. The controls worked well and the dual-input will win it many Web-designer friends who use two machines on the same desk. The price is good for a screen this size. The USB hub makes it convenient, as well as neat.

specs	
Company	Taxan
Model	Crystalvision 880
Screen	18.1 inches
Resolution	1,280-x-1,024 pixels
Connection	VGA x2
Extra features	Four-port USB hub
Price	£1,149
Contact	Taxan www.taxan.co.uk 01344 484 646

score	
Image quality	7
Design/control	8
Value	8
Star Rating	★★★★/7.9

Eizo FlexScan L771
This is a big screen, offering a whopping 19.5-inches of screen-space, and a 1,600-x-1,200-pixel desktop. This is the equivalent of a 22-inch CRT monitor. However, unlike a CRT of this size, there's no blurring in the corners or convergence problems. As one of the few screens that out-performs many CRTs on large, high-resolution images, it's a worthwhile – if expensive – purchase.

specs	
Company	Eizo
Model	L771
Screen	19.6 inches
Resolution	1,600-x-1,200 pixels
Connection	DVI/VGA x2
Extra features	Four-port USB hub; speakers
Price	£2,229
Contact	Eizo www.eizo.co.uk 01484 719 500

score	
Image quality	9
Design/control	7
Value	7
Star Rating	★★★★/8.0

22 inch ▶

LG Electronics Flatron 22
The new 22-inch Flatron is the first flat-panel monitor to rival the Apple Cinema Display in size. It also sports matching speakers that stand either side of the deliciously designed screen. If both the Cinema Display and the Flatron were the same price then they would be neck and neck. But there's a £1,000 price difference – and no amount of fancy design can justify that.

specs	
Company	LG Electronics
Model	Flatron 22
Screen	8 inches
Resolution	1,600-x-1,024 pixels
Connection	DVI, VGA and video
Extra features	Speakers
Price	£2,799
Contact	LG Electronics www.lge.co.uk 0870 607 5544

score	
Image quality	8
Design/control	10
Value	4
Star Rating	★★★★/7.3

Contrast is pretty much the same, though blacks are a little dusty on LCD screens. Colour accuracy tests show the CRTs ahead on this score. Faithful colour-reproduction is still something that CRTs hold sway on.

Colour is also less uniform on LCD screens than on CRTs, blighted by light and dark patches. This is because LCDs must be lit with a light source, while CRTs create the light and colour with the same light source. Quality on cheaper LCDs also suffers when viewing the screen from an angle, whereupon the colours change. It's less of a problem with modern LCD displays, but can still make a difference with colour-critical work.

Before you throw your hands up and your flat panel out, there's another matter to consider. Are you one of the elite that regularly calibrates your monitor? If so, then you're in a small minority that takes colour seriously. If, like most people, you performed an initial calibration with the Monitors Control Panel – and do so once a year – then the minor inaccuracies of an LCD screen will be no hardship for you. Lots of people seem to want colour calibration, but relatively few use it. So, unless you actually use calibration properly, don't worry that LCD isn't good enough for you.

The price is right?

The price of LCD panels is as volatile as RAM prices. Presently, prices are as low as they have been – and analysts are widely predicting a further flat-panel price war. As with all volatile markets, you need luck when making a purchase: if you buy now, prices may continue to fall through the floor; if you hesitate, they may go through the roof.

Additional features

There are important features with LCD screens that are not easily compared. For instance, the LG and the Samsung 15-inch screens have built-in TV tuners. This is fantastic if you want them, but useless if you work in a basement with no TV signal. Other more common bonus features include speakers and USB hubs. Speakers are always handy, although sound quality is unlikely to match a pair of good external speakers, such as harmon kardon's SoundSticks. But compared to the Mac's weedy internal speaker, it's likely to be an improvement. A USB hub is a helpful feature. A two-port hub is just enough to connect a keyboard and mouse. If the screen houses a four-port hub, you'll be able to connect extra gadgets, such as a Palm cradle or printer. Although a four-port hub costs only about £30, it does mean having more gadgets on your desktop. Having a hub built into your monitor keeps cable clutter to a minimum.

Can your office justify the expense?

Although still pricier than CRTs, there are two good reasons why flat-panel displays are a good idea for offices. Heat output is one. A large CRT monitor can get pretty warm, and an office full of them will end up feeling like a sauna, unless the air-conditioning is cranked up. Flat-panel displays use up to 60 per cent less energy, making for a cooler office and considerably lower electricity bills.

Space is another issue. A 22-inch CRT will swamp most desks, but even a big LCD screen leaves plenty of elbow room. An office full of LCDs can mean being able to fit more people into the same space – thus keeping the accountants happy.

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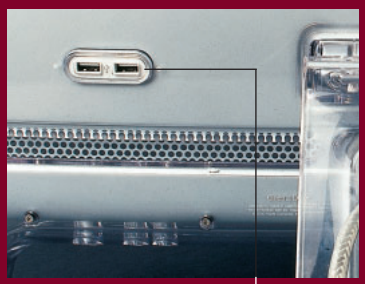
Apple Cinema Display

The daddy of all flat-panel displays. It does have some quirks – not least that it works only with Macs equipped with an Apple Display Connector (ADC). Although this is good for excluding PC users from our lovely Apple designs, it also excludes those with a Mac older than about a year. Its price may have fallen, but it's still pricey. But nice things cost money.

Company	Apple
Model	Cinema Display
Screen	22 inches
Resolution	1,600-x-1,024 pixels
Connection	ADC
Extra features	Two-port self-powered USB hub
Price	£1,799
Contact	Apple www.apple.com/uk 0800 039 1010
Image quality	10
Design/control	9
Value	7
Star Rating	**★★★★★/9.0**



Port-tastic
Apple's dual-USB ports means peripherals can plug straight into the display.

Apple 17-inch Studio Display

With its recent price cuts and a new 17-inch Studio Display, Apple has captured stealthily the LCD market for Macs. The 15-inch Studio Display is great – and, although now cheap enough for most people to afford, is too small for graphics pros. They are more likely to go for the 22-inch Cinema Display – but at £1,799, hardly anyone else will. The new 17-inch Studio Display is a perfect halfway house, slotting neatly into a large market. It not only competes with most other 17-inch LCDs on price, but beats them hands down, being £200 cheaper than the nearest model. Even though it's almost half an inch smaller than the 17.4-inch class, the difference is minimal – and certainly worth the £200 saving. On top of this, it's cool looking – with all the class of the Cinema Display, but in a slightly smaller package.

It has enough screen real estate to accommodate most desktop furniture. In fact, the chances are that it offers more room than your current CRT display. Even if you have a 22-inch CRT, a resolution of 1,280-x-1,024 pixels isn't always very crisp. On the 17-inch Studio Display, though, the same resolution is always crystal clear.

Company	Apple
Model	17-inch Studio Display
Screen	17 inches
Resolution	1,280-x-1,024 pixels
Connection	ADC
Extra features	Two-port self-powered USB hub
Price	£699
Contact	Apple www.apple.com/uk 0800 039 1010
Image quality	10
Design/control	9
Value	10
Star Rating	**★★★★★/9.3**

Macworld's buying advice

With so many excellent monitors, it's hard to choose clear winners, though Apple has done well. We tested no bad screens as such, although a few are overpriced.

Due to the latest round of price cuts Apple is now the leader of the LCD pack. The Studio Display has always been a thing of beauty, but now that its price has fallen to the point where it's in the same price band as its 15-inch competitors – meaning they don't stand a chance. It may still be a bit more expensive, but if you can afford this, you'd be a fool to miss out. The only drawback with the Apple screens is their ADC (Apple Display Connector) connection. ADC carries both digital and analogue video signals, USB and control signals, and power for the 17-inch Apple Studio Display, the 15-inch flat-panel Apple Studio Display, or the 22-inch Apple Cinema Display. But this isn't a problem if you have a new Mac.

At the other end of the scale, the Cinema Display is still the best-looking screen on the planet. The price has come down for this model too – now it's a mere £1,799. A runner-up was the 19.6-inch Eizo, which has an even-higher resolution. However, even though it's a great screen, it just can't compete on looks, and the price is already out of step with the rest of the big screens.

Mention should also be made of the two TV/LCD models – the LG and the Samsung. These are of an excellent quality and are extremely well designed. Their TV capability will appeal to many. The bottom line, though, is that there are no bad flat-panel displays – only bad prices. Comparative shopping will unearth a bargain. **MW**

Inside the OS X extras

Get the scoop on five useful applications that come with Apple's new operating system.

By James Bradbury, Brett Larson and John Rizzo

Apple has provided not only a completely new operating system but also a collection of new applications and utilities to show it off. Like the MacPaint and MacWrite programs on the earliest Macs, the new Mac OS X applications exist as much to demonstrate the promise (and polish) of OS X as to do their primary jobs.

Take the Clock application. Despite its location in the Utilities folder, its actual utility is debatable. After all, if you want to know what time it is, you need only glance at the right side of the menu bar. But when you adjust the transparency of Clock's analogue display so that it floats faintly over a document window without obscuring your work, the elegance of OS X's Aqua interface is undeniably apparent. A similar claim can be made about the updated Stickies application. No, the world hasn't been clamouring for a better, prettier Stickies app, but this one sure looks cool.

Given the resources Apple surely invested just to get the first version of OS X out the door, it's a little surprising that apps as non-utilitarian as Clock or as inessential as the Chess program were included at all. But most of Apple's OS X applications serve more practical needs. Console, Process Viewer, Terminal, and NetInfo Manager, for instance, help Unix and network geeks get their work done. Internet Connect, Grab, QuickTime Player, Image Capture, Calculator, and TextEdit take care of basic functions – often far more elegantly than their predecessors. Showing its commitment to open-source standards, Apple includes Applet Launcher (for Java applets), too.

Here's a look at the most-important applications that come with OS X. And to help you get some OS X dirt under your nails while you wait for Carbon apps to appear later this year, we've also included some tips on using them.

Address Book

For Apple to call Address Book an application is somewhat misleading. This is not what used to be called, in pre-handheld days, a "personal information manager," or PIM. Address Book is not what you'll use to address your holiday newsletter or to keep track of birthdays. Rather, Address Book is like a part of Apple's Mail application (see Mail review, page 98) that has been split off into its own app – like *Joanie Loves Chachi* was spun off from *Happy Days*.

Every email program has some kind of address book where you can keep a list of email addresses that you frequently use. Address Book provides that functionality in stand-alone form. Its primary purpose at present is to provide address-book functionality to Mail, but there's no reason it couldn't work with other email programs or interact directly with your handheld in the future. Address Book supports the vCard specification for personal information – a standard endorsed by everyone from Microsoft to Palm.

Address Book lets you save individual addresses as vCards, essentially electronic business cards. They can be sent (by email or IR beam) as files and then imported into applications such as Address Book by dragging and dropping.

Putting it in contacts When you open Address Book, a window lists all of your contacts. This view lets you see only each contact's name, phone number, and email address. To view more information, you must open a contact's record.

There are two easy ways to add contacts. One is to import them from a tab-delimited list. If you keep email addresses in a PIM such as Palm Desktop, it's easy to save your contacts

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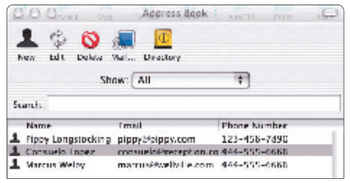


Desktop business cards
Want to put a vCard on your desktop? Simply grab the head icon next to the contact's name (top), and drag it to the desired spot (bottom).

in a text file and then use Address Book's File: Import command. If you want to import addresses from a different email program's address book, things might get trickier. Check out the eMailman Web site (**http://emailman.com/conversion/#addrmac**) for tips on importing address books from various programs.

The other approach is to use Address Book's Add Sender Command (⌘-Y) to quickly add a bunch of email addresses. Say you have a folder of saved messages from your friends. Select them, and redirect them to yourself from within your email program. (Don't forward them or they'll be sent to you from yourself.)

Send these messages; then quit your email program before it has a chance to check your mailbox. Log on to OS X's Mail program to receive the messages that you just redirected to yourself. Select them, and press ⌘-Y.

Address Book has a few other cool tricks, as well. To put a vCard from Address Book onto your desktop, click on the address's head icon and drag the vCard to where you want it (see "Desktop business cards", left).

If you receive a vCard that you'd like to add to Address Book, double-click on the vCard, and it will open in the Address Book application – with a button that allows you to add it.

Every vCard has a field for a picture. It's simple to add a photo to this field: you just drag-&-drop a JPEG, GIF, TIFF, PNG, or PDF file. Apple says you'll get the best results using a file that's 64-x-64 pixels, but you can get acceptable results with photos nowhere near that size or proportion, as the following example illustrates.

1. First, create a new contact record in Address Book.
2. In the Name fields, enter Andy Ihnatko (*Macworld* columnist and beloved industry figure).
3. Enter Andy's email address: andyi@world.std.com. This step is essential, because without an email address, a record cannot contain a picture.
4. Using Microsoft Internet Explorer, visit www.andyi.com.
5. Scroll down to the "unnaturally flattering" photo of Andy; click and hold the mouse on it to download it. Save it to the desktop for easy access.
6. Quit Internet Explorer.
7. Drag the photo from the desktop to the Picture field on the address record you just created. Once Andy's face appears in the field, you can click on Save. Andy Ihnatko's name, email address, and photo should now appear in your Address Book.

Adding a photo to a record has one immediate benefit: every time you get a message in OS X's Mail application from that email address, the person's photo will appear in the upper right corner of the Address Book window.

Of course, to test our example you'd have to get an email from Andy Ihnatko; fortunately, he's a prolific correspondent.

Terminal

Before 1984, most computers used what was essentially a "terminal" interface. You may remember it well: the blinking orange cursor waiting for you to type something such as C:// on a black screen. The Mac changed all that, as the first personal computer to have a GUI (graphical user interface). So it may seem odd that Mac OS X includes Terminal, an application that lets you access the Unix command line underneath the interface.

Why would Apple catapult us back to the early eighties? Well, even though you'll be just fine if you never venture beyond OS X's Aquified programs, you can do much more with OS X by taking control of the command line. You can use OS X's built-in suite of Unix commands to perform a wide range of tasks, from finding hidden files to deleting files you're unable to put in the Trash.

But you don't have to limit yourself to the commands under OS X's hood. The Internet abounds with Unix applications that you can compile and run from the command line. For instance, you can use pine (a popular text-based email client) and mmap (an application that scans IP addresses for open ports, helping you find security holes in your network). You can also use the command line to create shell scripts (similar to AppleScripts) that enable your Mac to perform tasks such as copying a set of files to a removable disk and then compressing them. Using a script with the Unix cron command – which lets you schedule system functions such as copying or synchronizing files – you can even have your Mac run scripts in your absence.

Hey, good looking Before you dive into using the command line, you may want to try customizing Terminal's appearance. For example, you can change the size of the Terminal window if you want to see more or longer lines of text than are visible in the default setting, 80 by 24 characters.

Simply go to Terminal's Preferences dialog box and click on General to get to the window-size options. Keep in mind, however, that if you access a computer remotely, Terminal will use the standard 80-by-24-characters setting on the remote display. The result could look rather odd.

You can also go for a whole new look by customizing the font and background colours of the Terminal window. You do this from within the Colors and General panels in the Preferences dialog box (see "Terminally beautiful").

Perhaps a more useful trick is making the Terminal window semi-transparent, so you can see other applications while you're using Terminal. To adjust transparency, type defaults write com.apple .Terminal TerminalOpaqueness 0.4 in the command line: 0.4 is the level of transparency; the higher the number, the more opaque Terminal's window. One limitation is that all you'll be able to see through it are your Carbon and Cocoa applications.

Grab

Grab is a simple program that performs an essential task: capturing screen images as TIFF files. Apple no doubt had to create Grab so that the developers working on OS X applications could illustrate on-screen help and instructions. The program is useful for the rest of us, too, since it offers an easy way to quickly grab low-resolution images off the screen. And Grab has a couple of nifty features that far outstrip the old keystroke combinations of early Mac OS iterations: for instance, you can choose the cursor you'd like to appear in your screenshot, take timed shots, or choose a portion rather than the entire screen.

Grab is also one of the applications that appears as a service in other applications. To see how this works, open the TextEdit application from the Applications folder. Type in some text, and then choose Services: Grab: Selection from the TextEdit menu. After you select a portion of the screen as directed, Grab inserts it into your text window.

NetInfo Manager

NetInfo Manager is a powerful administration tool, but it's not for the average user. If you're a system administrator, or if you've had experience managing Unix computers that used the NetInfo Database or Mac OS X Server, you're a prime candidate for putting this application to work.

You use NetInfo Manager primarily to perform Unix administration tasks. You can use NetInfo Manager to mount NFS directories, for instance (Network File System is a Unix file-sharing standard for localnetworks). Since OS X stores user and password information in the NetInfo database, you can also use NetInfo Manager (instead of System Preferences) to make changes to user accounts. If the database is shared on a network, you can administer user accounts on multiple Macs and Unix machines.

Are you ready for your Mystery App? There's nothing Mac-like about the NetInfo database, and the NetInfo Manager utility is only remotely Mac-like. Making changes in this application – such as selecting an item and pressing the delete key – can cause damage and even make OS X unusable on your Mac. Be sure you know how to use this program before opening it.

It's not easy to obtain help in using NetInfo Manager. Don't even bother looking to the Help menu, which will tell you only, "Help isn't available for NetInfo Manager." Fortunately, you can access information from the Unix command line. Open Terminal (Applications: Utilities), and type the command man netinfo in the Terminal window. This will bring up a Unix manual (circa 1990) that defines the various aspects and parameters of the NetInfo database. In order to scroll through the manual, just press the return key. When the percentage displayed at the bottom of the Terminal window reaches 100, you have reached the end of the document.

Getting into NetInfo Manager Except for its Aqua interface, this NetInfo Manager is the same as the Mac OS X Server version. The top half of its main window consists of a Directory Browser that looks like the Finder's column view. However, NetInfo directories are not folders in the file system but subgroups of the database. When you click on a NetInfo directory, the bottom portion of the NetInfo Manager window will display Property fields and a corresponding value.

You can edit the field names and values or create new directories. To edit them, click on Users and then on a user name. This will let you see and edit the user's name, short name, password, password hint, and other attributes.

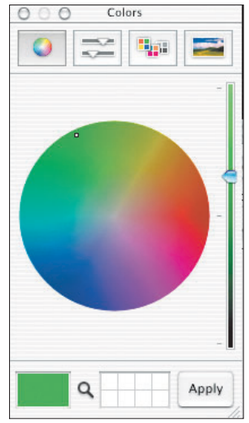
Power troubleshooting If you need maximum control over a system so you can do low-level Unix troubleshooting, log in to NetInfo Manager as the root user. This will give you access to every folder in OS X – even the invisible ones. (Unless you're sure of what you're doing, though, skip this trick; it gives you so much control that you can endanger your entire system.)

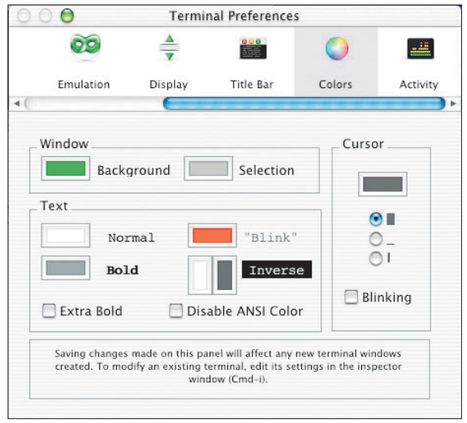
To log in as the root user, click on the padlock icon in the lower left portion of the NetInfo Manager window, and type in your administrator password (the password you chose when you installed OS X). Now go to the Domain menu, select Security, and choose Enable Root User from the submenu. Create a password for the root domain, and you'll be able to log in as the user Root.

More X in basket

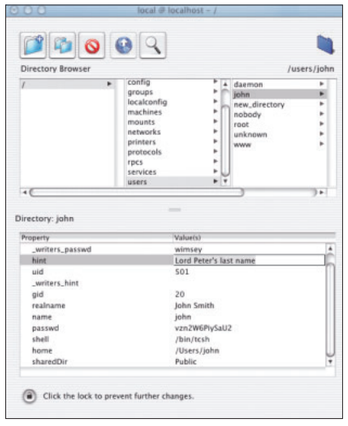
The extra applications that come on the Mac OS X installation disc are certainly not the be-all and end-all of what we can do with this new operating system. Instead, they simply whet our appetites for the feast that will be available in the Mac's near future.

OS X's Mail reviewed, page 98





Terminally beautiful
Get in touch with your inner geek – change Terminal's look by using green Monaco text on a black background (think Apple II).

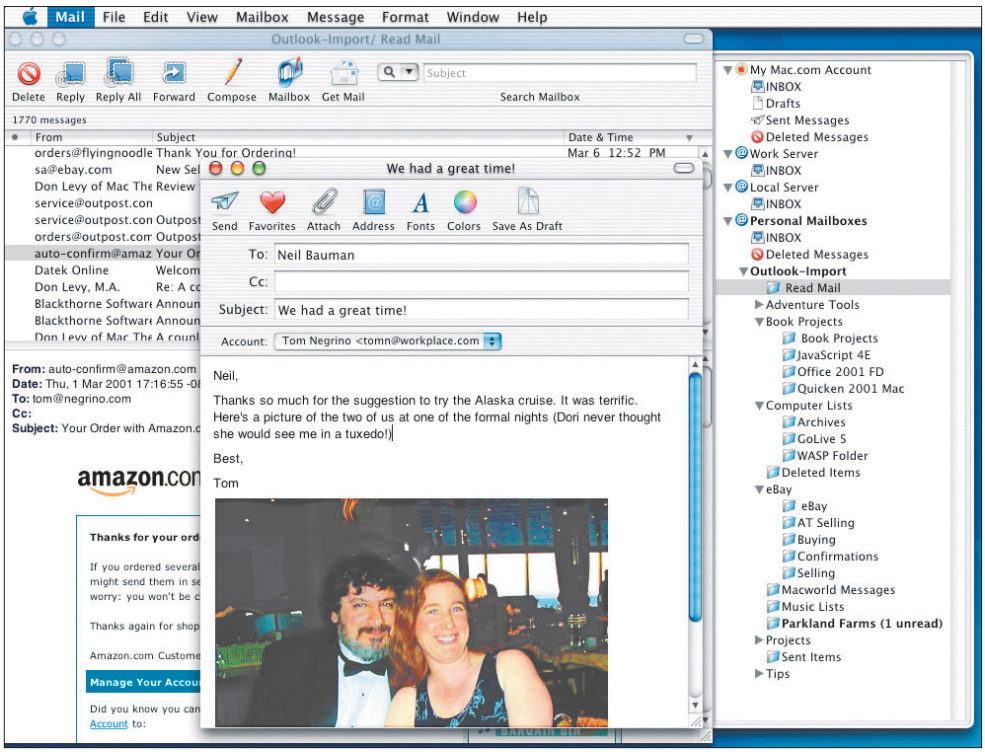


The key to change
You can use NetInfo Manager to make changes to Mac OS X user names, passwords, and hints; all are stored in the NetInfo database.

Bundled OS X email program

Mail

Publisher: Apple (0870 600 6010) www.apple.com
Pros: Nicely integrated with iTools; flexible mail-composition; many formatting options.
Cons: Buggy; limited by Address Book; weak mail filtering; inadequate help files.
Price: Free with Mac OS X
Min specs: Mac OS X
Star Rating: ★★/4.5



Pretty on the outside
Mail, which is free with OS X, looks great – thanks to the Aqua interface. However, it needs more depth and better stability.

Mac OS X's commitment to the Internet is one of its most appealing features, from the Apache Web server under the hood to the inclusion of iDisks in the Finder. Most people use the Internet primarily to send email, so Apple's Mail 1.0, included with OS X, is welcome, especially as one of the few native Mac OS X (or Cocoa) applications available in these early days. Unfortunately, the first version of Mail has many drawbacks and outright bugs, making it unsuitable for heavy use.

The program includes most of the features you would expect in a modern mail application. It supports multiple email accounts, of which any can be POP, IMAP, or Unix. You'll also find a Rules feature, for filtering mail based on criteria you select; support for multiple signatures; and the ability to create and view messages with images and Rich Text formatting. Converting from other mail programs is easy; Apple has made a set of unsupported AppleScripts, available on its Web site, that let you import messages from Microsoft Entourage and Outlook Express, Qualcomm Eudora, Netscape Communicator, and Claris Emailer.

As part of the initial registration of Mac OS X, you're asked to enter or create an iTools account, which includes a mac.com email address. (You can also choose to add other mail accounts during setup). The installer conveniently sets up your mac.com account in Mail as part of this process, so you're ready to send and receive email as soon as you're up and running with Mac OS X. If you skipped entering your iTools information during installation, Mail can still set up your mac.com account for you. Just open System Preferences, click on the iTools tab, and enter your iTools user name and password; then click on the Email tab and select the Use iTools Email Account option.

Making and reading mail

Mail lets you compose email messages in one of two formats: plain text and Rich Text. The first is text with no fancy formatting. Rich Text adds formatting tags to text, allowing you to add fonts, font styles, and inline images. Rich Text is similar to HTML; however, Mail cannot create email in HTML format. Rich Text conforms to the Internet mail-format for enriched text and can be read (with varying degrees of accuracy) by programs such as Eudora and Outlook Express. Some older email programs can't handle Rich Text; those programs will show the formatting tags in the message body and turn embedded images into attachments. Mail's Rich Text is not the same as Rich Text Format (RTF), a document interchange format created by Microsoft (and also the native format of OS X's TextEdit).

Using Mail to compose messages is easy and enjoyable. Mail uses Apple's Address Book application for addressing; addresses automatically complete as you type them, or you can drag and drop addresses from Address Book into your new message form. One annoying drawback is that if a contact has more than one email address listed in Address Book, Mail can access only the first address. You can work around this by making another address record for each email address, but there's no way to define an email address as the primary one for a person. Spelling mistakes are underlined as you type, and you can fix errors simply by clicking on a contextual menu item. And of course, as a Cocoa program, Mail takes full advantage of OS X's gorgeous text styling and rendering, with the full palette of antialiased fonts, styles, and text colours available.

Mail displays incoming email that was created in plain text, Rich Text, or HTML formats. Unfortunately, the HTML mail display is buggy; sometimes inline images fail to display when you first view the email message. If you switch to another message, then back to the first one, the images load properly.

Deficient in the details

Good filtering is an essential feature for email programs (especially to help keep the flood of spam out of your in-box), but here Mail falls short. The range of filtering criteria is too small, and you can filter only by one criterion per rule. Mail also lacks some useful features you can get in other programs, such as Outlook Express's Junk Mail Filter, or Eudora's text-formatting plug-ins.

You'll quickly run into some of Mail's limitations. For example, you can search only one mailbox at a time, and you can't redirect incoming mail. Overall performance wasn't especially snappy on a 400MHz Power Mac G4 with 256MB of RAM; like much of OS X, Mail just feels slow, especially when opening mailboxes with many messages or resizing windows.

If you need assistance, you probably won't find it in Mail's abysmal help files. Far from comprising a good tutorial or reference, they supply only the smallest amount of information, and they fail to explain many of Mail's features altogether.

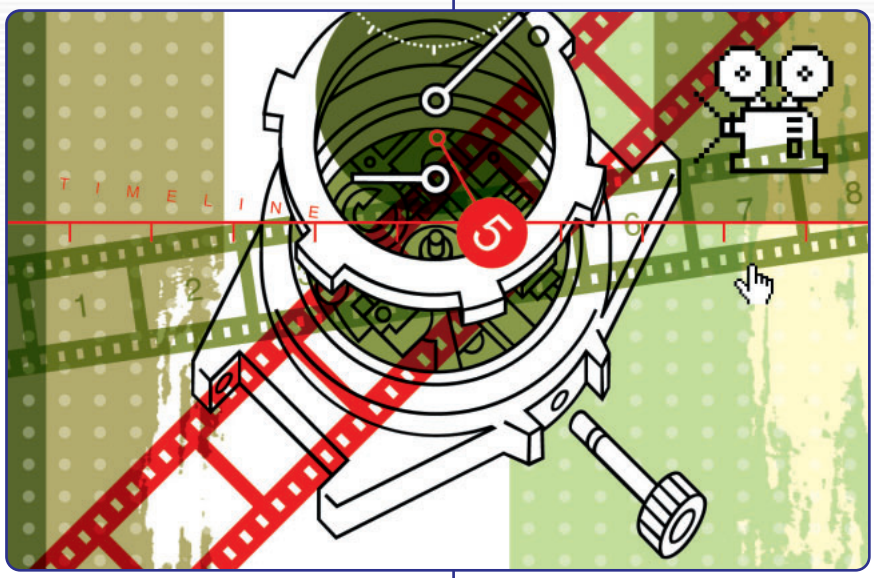
Given the importance of email, you would expect Mail to be practically bulletproof, or at least immune to simple crashes. Unfortunately, this is not the case. The program unexpectedly quit many times during my testing, and I discovered a reliable way to crash it: simply double-clicking on a particular spot in the mailbox list.

Macworld buying advice

That it's free is one argument in favour of using Mail, but when you consider Mail's problems, this argument may not prove strong enough. You can readily get free versions of other, better mail programs, and no one likes a program that crashes. Until Apple fixes Mail's bugs and addresses at least some of its shortcomings, you're better off sticking with Qualcomm Eudora or Microsoft Outlook Express.

Tom Negrino

Flash 5 expert guide



Use Flash 5 to add oomph to Web sites. By Philip Karmen

There's no doubt that Macromedia Flash has helped create some of the most memorable sites on the Web. No other program delivers such attractive animation, engaging interactivity, and synchronized sound. So, it's a shame that using Flash can be so frustrating. Flash's unintuitive interface, click-intensive dialogs, and limited scripting support have inspired a love-hate relationship between the program and developers. Sure, you can do amazing things in Flash – but it isn't easy.

Macromedia provoked a little more love, and a little less hate with the release of Flash 5 – a total overhaul of the program. Almost every corner of the program sports changes – many of them significant – including a streamlined interface, new drawing tools, expanded site-management features, and newly unleashed programming power. Here's a look at how Flash 5's tools and refined features will have you working smarter.

Although you can use Flash to create beautiful and engaging Web interfaces, the program can be a nightmare to navigate. If you've ever looked for your library under the Libraries menu (it's not there) or tried tinting several movie clips at once (you can't), you know why Flash designers complain bitterly about the program's interface. Flash's face-lift adds dozens of subtle enhancements to simplify and speed up even the most mundane tasks.

A familiar face One of the most striking changes in Flash 5 is its look. Macromedia retooled the program's interface to make it more consistent with almost all Macromedia products. This makes it easy for new users to apply knowledge across programs.

In addition to being easier to learn, the new interface is also more efficient – thanks in large part to the near elimination of Flash 4's clunky modal dialog-boxes. The most-common controls and settings are now housed in panels – tabbed palettes that remain on screen.

While modal dialog-boxes had to be opened each time you needed to change an object's setting (a very click-intensive process) and closed before anything else could be done, panels let you inspect and modify several objects at once. This will save you valuable time on almost every task – from changing the font in several blocks of text, to modifying the alpha level of everything on the stage.

Macromedia has also tweaked Flash 5's timeline, which users are likely to find more intuitive than the old one. For example, you can now extend a layer simply by click-&-dragging its end. In the past you had to click once, wait for the cursor to change to a box, and then click-&-drag. Realizing that the new timeline may frustrate Flash users accustomed to the old way of working, Macromedia provides a preference setting that lets you view the timeline as in past versions.

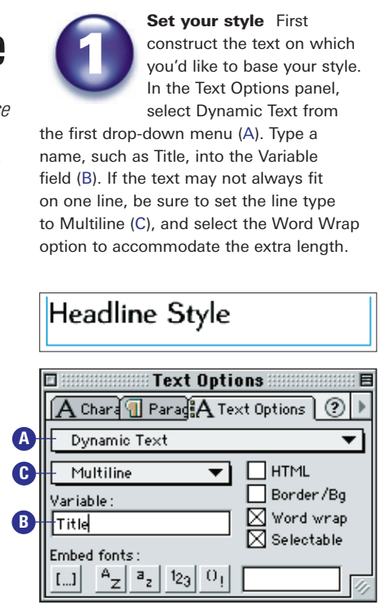
Controlling fine lines Designers who cringed at Flash's unusual drawing method appreciate Flash 5's new pen tool – a standard feature in most vector-illustration programs. In previous versions of Flash, designers employed a drawing method called vector clay – bending and extending shapes to mould illustrations. This organic-drawing process made many professional designers who were familiar with Adobe Illustrator and Macromedia FreeHand feel out of control – if not downright queasy. The new pen tool lets designers draw and

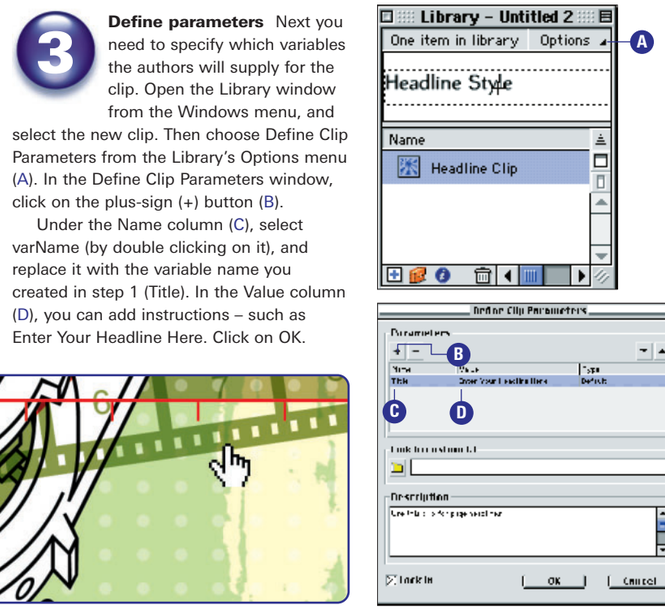
continues page 132

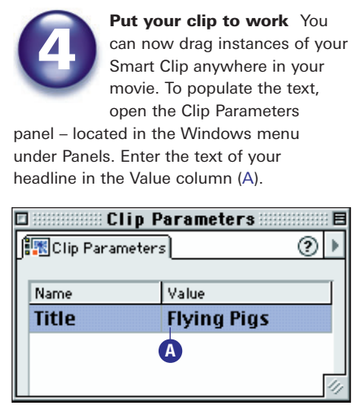
ILLUSTRATION: LEE HASLER

Perfect your style

You can use Flash 5's Smart Clips to impose consistency on often-used movie elements, such as type styles. Once the clip is created, team members can simply enter the text into the appropriate parameters window without worrying about the font or size.







Note: You won't actually see your new headline on the stage. To view the new text, open the Control Window and select Test Movie.

shape objects in a very controlled manner, using bézier handles. Macromedia not only added a pen tool, but also integrated it, making it completely compatible with the vector-clay drawing style of Flash. Shapes drawn with the pen tool can be modified with precise bézier handles, or by simply bending shapes and extending points. Likewise, you can modify anything you draw with the paintbrush or pencil tool, using the pen tool's Subselect option.

Basic drawing

While many designers will welcome the addition of the pen tool, Flash 5 still has a long way to go before it matches the powerful drawing features of professional illustration programs. Earlier versions of Flash attempted to bridge this gap by allowing users to import native Adobe Illustrator 6 files – a limiting option, considering that Illustrator is currently at version 9. In Flash 5, Macromedia has focused its efforts on improving integration with its own illustration program, FreeHand. You can now import native FreeHand – version 7 or later – documents into Flash 5. This means that an artist on your team can create complex graphics in FreeHand, and simply send you the finished files for direct import into Flash. (If you use Illustrator, you'll need to export your document as a .swf file – a feature built into Illustrator 9, and available to earlier versions with the help of the free Flash Writer plug-in from Macromedia.)

Web conversion

The FreeHand Import controls make it easier to repurpose print content for the Web – leaving you with fewer files to maintain. For example, you can lay out a multipage brochure using FreeHand, and then open the file in Flash. Flash doesn't have "pages", so after importing a FreeHand file, you can selectively map pages into separate keyframes (for images to appear sequentially) or into separate scenes (to use the graphics in distinct sections of your movie). You can also choose to distribute FreeHand's layers to individual Flash layers or to keyframes (see "A helping hand"). These options allow you to retain more attributes of the original FreeHand file. This is a giant step toward seamless integration of Flash and FreeHand.

Despite its significant interface changes, Flash 5 isn't all about looks. Aiming to please one of its most demanding groups of customers – programmers – Macromedia also took a hammer and monkey wrench to the inner workings of Flash, adding a level of flexibility and power previously missing from the program. Sure, you could create amazing Web sites in Flash 4 – but that's like saying you could build a house out of toothpicks. It's possible, but not easy. Pushing Flash 4's limited scripting capabilities beyond the simplest of tasks required a resourceful nature, and a host of complicated workarounds. Flash 5 addresses this problem – its scripting tools and improved text controls provide enough power and flexibility to make even the most control-hungry users smile with glee.

Getting up to code The most profound technical change in Flash 5 came in the form of an entirely overhauled programming language. Introduced in Flash 4, the original ActionScript was something experienced programmers called a "language" only while snickering. Key components of any programming language are functions – and Flash 4 had only a handful. Worse, there was no way to create your own. Instead of writing lines of code, you simply selected preset Actions (such as Go to) and filled in parameters (such as Go to frame 1) from a pop-up menu. Though Flash 4's ActionScript was very approachable for novices, experienced programmers felt hampered. Even programming simple tasks, such as exchange-rate calculation, required complex and funky workarounds.

Program possibilities

Flash 5 puts power back in the hands of programmers, letting them turn off structured guidance by selecting Expert mode in the Actions panel, and then typing code directly into a window. (The guided method of writing scripts is still available in Normal mode.)

The ActionScript has been extended to a true object-oriented programming language. What's better, the retooled ActionScript is now based on the same standard as JavaScript. Although ActionScript contains a few unique attributes specific to Flash – for example, what Flash calls (on (roll over) JavaScript calls onMouseOver – the syntax and structure of the code are the same.

Now that they have a true programming language at their disposal, Flash users can control their code. Functions, such as the currency-exchange calculator, that used to require three or four lines of complex code, can now be accomplished in one. And, because no one writes perfect code, Flash 5 even includes the Debugger feature, which displays code while your movie is playing to help you identify and weed out programming errors.

Broadening horizons The improvements to ActionScript in Flash 5 give experienced programmers the power to create sophisticated programming tasks that were previously impossible. In the past, you could apply scripts only to frames and buttons (making your movie loop or jump to a new URL, say). But in Flash 5, you can place scripts on Movie Clip instances – so you can write scripts that respond to events (called Clip Events) that formerly went unnoticed. For example, you can make a running movie clip appear to float across the screen by using the enterFrame event to push a movie clip one pixel to the right each time a new frame loads.

Looking smart If you aren't quite ready to become a programmer, Flash 5 also offers ways to insulate yourself from code, while still taking advantage of powerful interactivity features. The best example of this is Flash 5's Smart Clips – prefabricated, sophisticated code snippets that can be shared and recycled. One sample Smart Clip that ships with Flash lets you automatically create pop-up menus. All you have to do is select the Menu Smart Clip, and enter the menu items in the Clip Parameters window. You never need to get your hands dirty in the code.

Only a few Smart Clips ship with Flash 5. What makes the Smart Clips feature truly powerful is that you can create your own, greatly simplifying the construction of Flash files. Programmers can create custom Smart Clips for reuse by others. Say you have a Movie Clip of a bouncing-ball animation, you can turn it into a Smart Clip that lets the author specify how many times it plays – or bounces. A Flash designer can then drag this custom Smart Clip onto the stage, and set it to bounce five times. Later, he could drag out another instance, and make it bounce only twice. The same code is used in each instance, but with different parameters. And since the code is centralized, Smart Clips are easy to maintain. If you find a problem, you have to fix it in only one place. This flexibility makes customized Smart Clips great for creating repetitive and graphically consistent elements for your Web site – such as type styles (see "Perfect your style").

Dynamic text Not all of Flash 5's geek-pleasing enhancements involve

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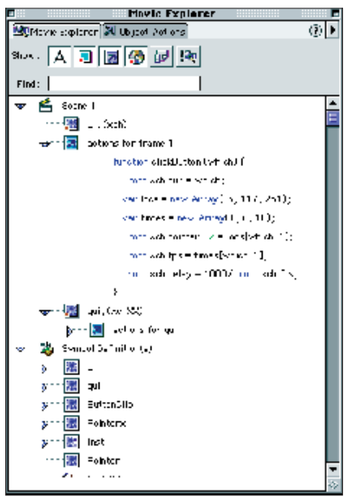
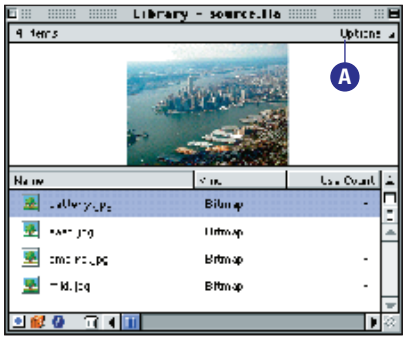


Flash in a haystack
Movie Explorer maps out every asset in a Flash movie, helping you decipher even the largest Flash sites.

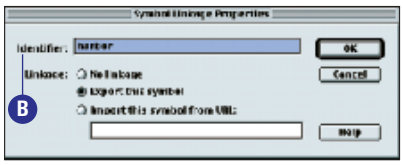
Sharing the wealth

Maintaining consistency throughout large and complex Flash projects is easy, if you have a shared library. This public repository lets you share common movie assets, and ensures that everyone is working with the latest version of elements.

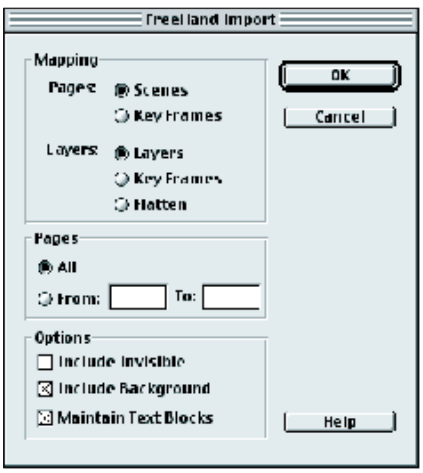
Set image-library linkage Start with a document that contains the library you want to share. Select a library item, and choose Linkage from the library's Options menu (A). This will force Flash to export the item.



Name your assets Give each item a unique identifier name in the Identifier field (B). If you want to replace the shared item later, you'll need to make sure your replacement uses the same identifier. Repeat this process for every item you want to include in your shared library.



Export the file Save the Flash file under the name Shared. Then open the Control menu, and select Test Movie to export the file. This will create a file called Shared.swf. Anyone can now select Open As Shared Library from the File menu in his or her Flash file, to link to and use the shared Library.



A helping hand

FreeHand's import options let you control how your layers and pages are distributed to Flash.

Sharing the load

More and more, designers and programmers are collaborating to build large Flash projects. This team effort can produce a unique set of problems. Working in teams requires that everyone be able to work simultaneously, and, if need be, take over other parts of the project at a moment's notice. However, working simultaneously is impossible if there's just one master file. And making sense out of team members' Flash files can be more difficult than finding where they keep the silverware in their kitchens. Luckily, Flash 5 now addresses many of these productivity issues.

Getting noticed Large and complex Flash files tend to get unwieldy. If you've ever had to update a large file you programmed a long time ago, you probably found it easier to just start over. And forget about trying to edit someone else's work! You'd have an easier time hacking into the MI5's computer system.

Flash 5's new Movie Explorer can help navigate complex projects by creating a visual map of the whole file – including fonts, graphics, and scripts (see "Flash in a haystack"). Its hierarchical view lets you sort, print, and even jump to any part of your movie; it's a great tool for making small tweaks to large movies. You can use the Movie Explorer to quickly find and change every instance of a particular font – a huge time-saver.

Learning to share Working with multiple designers often means working with multiple design styles. But, without strong graphic-consistency, a Web site can wind up looking sloppy and unprofessional. Imposing a standard style requires keen attention to detail; making sure every member of a group has the correct and updated versions of fonts, images, and other movie assets is a challenge.

To keep all team members on the same page, Flash 5 allows groups to access a shared repository of elements. This shared library can include images, movie clips, fonts, and even Smart Clips. And just as regular Flash libraries store the media once, no matter how many times you recycle an item, team members need to download the contents of a shared library only once, which keeps files compact. If a shared library item is edited, the change is automatically reflected in every file linked to that library. For example, if you add rounded corners to a button in the shared library, you'll see that change everywhere the button is used. This ensures consistency even as the design changes. (To learn how to create a shared library, see "Sharing the wealth".)

Flash 5 is built for productivity and power. Its new features and enhancements make it more efficient, more flexible, and easier to maintain. Flash 5 won't start making Web sites for you, but it will definitely make the job much easier. Although Flash veterans may at first have been put off by some of the changes, once they get over the initial shock and adapt to these ways of working, they're sure to find plenty to keep them satisfied. And, every minute invested in learning a new approach will be paid back in hours of saved time. **MW**

programming. Macromedia has also added a surge of power to the program's text-handling features. Flash 5 now offers basic HTML (1.0) text formatting, in addition to traditional antialiased display type. This makes it easy to reuse text from an existing Web page, without reformatting it. But, the true power of HTML text comes into play with dynamically updated Flash sites. Regular Flash display type becomes locked once the movie is exported. But with HTML-formatted files, it's easy to make Flash content automatically update, or change formatting, while a user visits your site. And, now you can put a link right inside your dynamic text, instead of carefully positioning an invisible button over the word.

Missing the Flash It's worth noting that Flash 5 is not entirely backward-compatible. While you can use Flash 5 to create a movie that works in the Flash 4 player (which has a huge install base), you won't be able to use many of the newest and best scripting features, such as Smart Clips. To help you remember which scripts are off limits, Flash 5 highlights the scripts in the Actions panel when they're unavailable in the format to which you're publishing. This is an improvement over Flash 4, in which you could deliver to Flash 3, but you had to know which features were off limits.

Charting success

Bring dull data to life.

By Cathy Abes

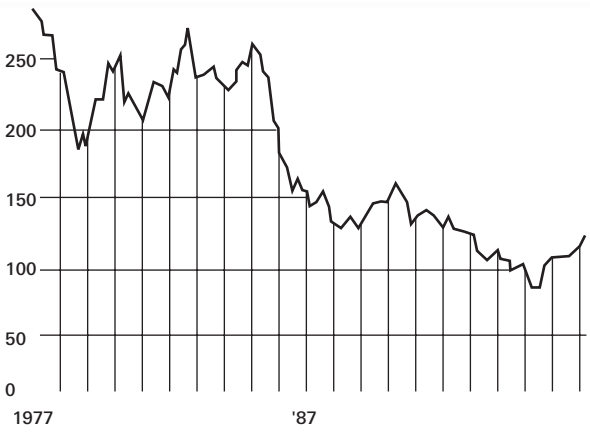
When you think of a chart, artistic expression doesn't usually jump to mind: you may picture simple jagged lines on horizontal and vertical axes, or coloured pie slices. But, Rod Little's informational graphics, which liven up the pages of *US News & World Report*, present statistical data in a new light. Rod looks for unusual ways to weave images around static numbers, transforming them into visually arresting tableaux.

To illustrate two related line graphs, comparing the US economy with Japan's, Rod conjured up stylized sumo-wrestlers to symbolize Japan. One wrestler supports a huge cargo box that shows the value of the Japanese yen against the US dollar over 20 years. In the second graph – which charts Japan's trade surplus – another Japanese wrestler swims confidently above the waterline while Uncle Sam struggles below the surface, attempting to rise above the US trade deficit. Double fever lines define the strokes of both swimmers.

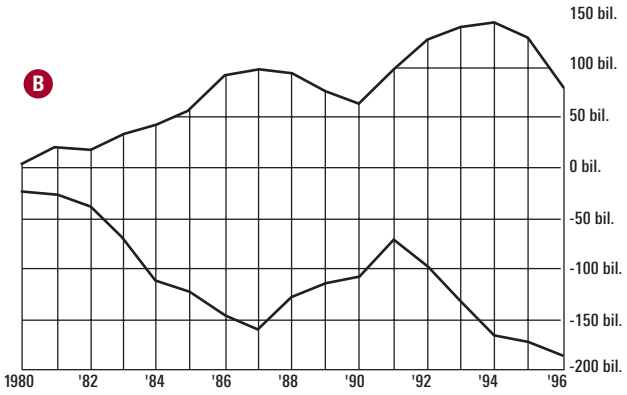
Although Rod's illustrations are clever and imaginative, they never overpower or obscure the facts. This helps them communicate complicated data in a clear, powerful style that's appealing to the mind and the eye.

1 **Chart the data** Rod began by plotting the numerical data in SPSS's graphing program DeltaGraph Professional (£199; 01483 719 201; www.spss.com). Rather than using pie or bar graphs, he opted for single-line (A) and double-line (B) charts: these are best for visually comparing trends over time.

A

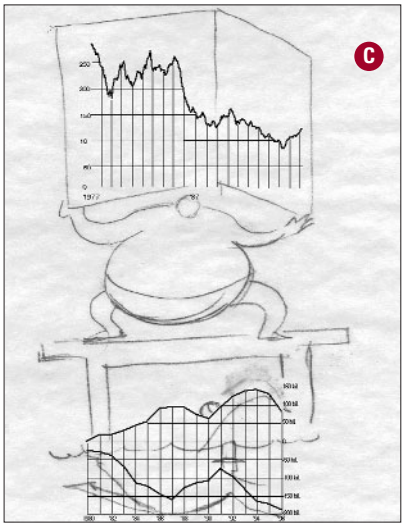


B



2 **Sketch the design** To add illustration elements, Rod pasted the finished graphs into Macromedia FreeHand, printed them out, and covered them with tissue paper. He then began sketching the figures and other elements around them (C). Once he had a design he liked, Rod scanned the sketch and used it as a foundation for building his infographic – he outlined the shapes with the pen tool on one layer, and filled each shape with colours, gradients, or blends on successive layers.

C



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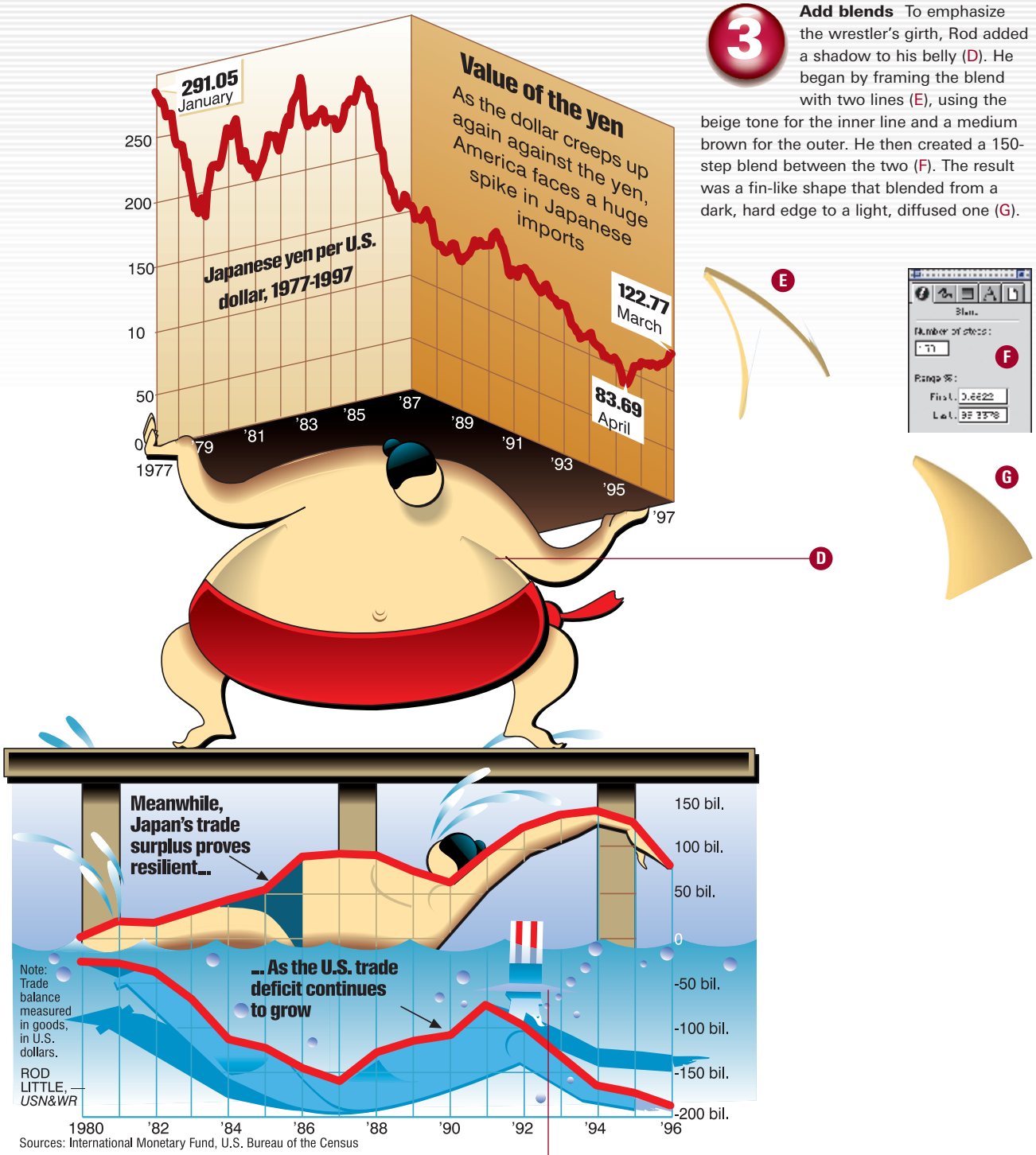
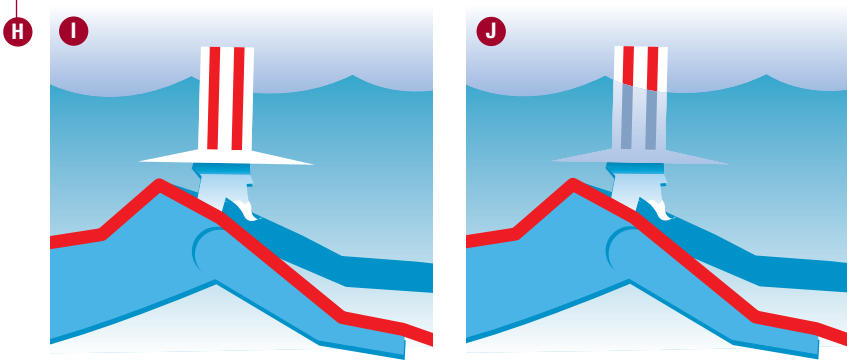


3 **Add blends** To emphasize the wrestler's girth, Rod added a shadow to his belly (D). He began by framing the blend with two lines (E), using the beige tone for the inner line and a medium brown for the outer. He then created a 150-step blend between the two (F). The result was a fin-like shape that blended from a dark, hard edge to a light, diffused one (G).

4 **Create transparency** To make Uncle Sam appear to be underwater (H), Rod used transparency. First he added subtle tints of blue and black to several areas of the ocean's blue-green colour (I). He then selected both the ocean and the Uncle Sam figure. After choosing the Transparency command (Modify: Combine), Rod reduced the opacity to 83 per cent; the figure's submerged portion took on a translucent variation of the ocean's colour (J).



Word 2001: Table talk

Getting to grips with Office 2001. Part One. By Nan Barber & David Reynolds

How do you use Word to create a résumé, agenda, program booklet, list, multiple-choice test, Web page, or other document where numbers, words, and phrases must be aligned across the page? In the bad old days, people did it by pressing the Tab key to line up columns. This method is a recipe for disaster. (Unfortunately, thousands of people still use this method—or, worse, they still try to line up columns by pressing the Space bar lots.)

Using Word's table feature is light-years easier and more flexible. Each row of a table expands infinitely to contain whatever you put into it; everything else on its row remains aligned. Tables also have a few simple spreadsheet features.

Creating tables

There are two ways to insert a table: you can let Word build the table to your specifications, or you can draw it more or less freehand.

Inserting a table The quickest way to insert a table is to use the Insert Table pop-up button on the Standard toolbar (see "Insert certainties").

If the toolbar isn't visible, choose Table➔Insert➔Table. The Insert Table dialog box opens, also shown overleaf.

After you choose the number of rows and columns you wish to start with (you can always add more later), click an AutoFit radio button to tell Word how to size the columns across your table. If you know how wide in inches you'd like each column to be, click "Initial column width" and set a measurement in the size box. "AutoFit to contents" creates skinny columns that expand as you type into them, and "AutoFit to window" spaces the selected number of columns evenly across the page. The table appears in your document at the insertion point when you click OK. "Size well be" shows a small 3-x-3 table.

Drawing a table Word's Draw Table tool gives you free rein to form the table of your dreams – the trick is learning to control it. To summon this toolbar, click the Tables and Borders button on the Standard toolbar, choose View➔Toolbar➔Tables and Borders, or choose Table➔DrawTable. The Tables and Borders toolbar opens and the cursor turns into a pencil.

When you drag the pencil horizontally or vertically, it draws lines; when you drag diagonally, it draws boxes. Using these techniques, you can design even the most eccentric, asymmetrical table on earth.

The tidiest way to begin drawing a table is to drag diagonally to create the outer boundary, as shown at the left in "Table draw", then drag horizontal and vertical lines to create the rows and columns. Drawing your own table is the best option when you want a variety of widths in your rows and columns, rather than evenly spaced ones.

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Role	Show	Where Performed
Tevye	*Fiddler on the Roof*	Mill Mountain Playhouse, 1996
Rumpleteaser	*Cats*	College Light Opera Company, 1995
Director	*A Chorus Line*	Cleveland Playhouse Youtheatre, 1994
Jesus	*Godspell*	Dayton Young Players, 1993
Nathan	*Guys and Dolls*	Dayton Young Players, 1992

Role	Show	Where Performed
Tevye	*Fiddler on the Roof*	Mill Mountain Playhouse, 1996
Rumpleteaser (Understudy)	*Cats*	College Light Opera Company, 1995
Director	*A Chorus Line*	Cleveland Playhouse Youtheatre, 1994
Jesus	*Godspell*	Dayton Young Players, 1993
Nathan	*Guys and Dolls*	Dayton Young Players, 1992

Role	Show	Where Performed
Tevye	*Fiddler on the Roof*	Mill Mountain Playhouse, 1996
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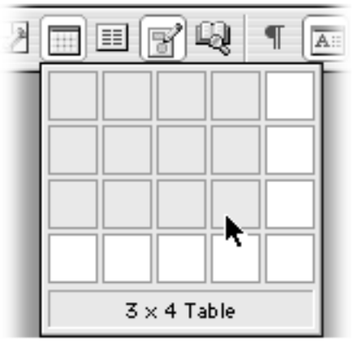
Director	*A Chorus Line*	Cleveland Playhouse Youtheatre, 1994
Jesus	*Godspell*	Dayton Young Players, 1993
Nathan	*Guys and Dolls*	Dayton Young Players, 1992

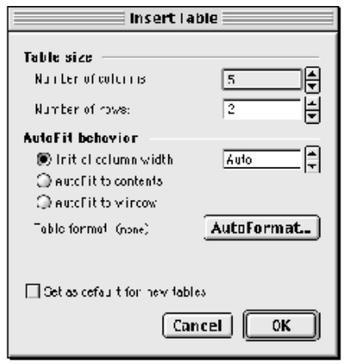
Tables are top

Top: If you use tabs to set up a table, things may look good at first – as long as every line fits within its space and you never plan to insert any additional text.

Middle: Here's what's wrong with the tab approach. When you insert the word Understudy into one of the columns, it pushes too far to the right, causing an ugly ripple effect that will take you a long time to straighten out.

Bottom: If you use a table, you never have this kind of problem. You can type as much text as you like into a "cell"; that row of the table simply expands to contain it. (The light grey gridlines don't print unless you want them to.)



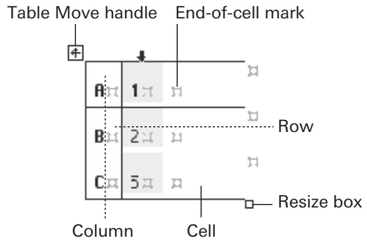


Insert certainties

Left: The Insert Table button on the Standard Toolbar is a quick way to make a small table. As you drag through the grid, you're specifying the table size you want. (You can drag beyond the boundaries shown here, by the way, to specify – for example – a 9-x-9 table; the pop-up grid grows as necessary.)

Right: If you often use the same kind of table, you can turn on "Set as default for new tables" to make your favourite settings the new defaults. They will appear in this dialog box each time you choose Table➔Insert➔Table.

There's more on Word tables, and a whopping seven whole chapters on Word 2001 from 'Basic Word Processing' to 'Word Meets Web' in Nan Barber & David Reynolds' Office 2001 for Macintosh: The Missing Manual *(Pogue Press/O'Reilly; ISBN: 0-596-00081-2). This article is the first of a series of Macworld extracts from the book, which costs £17.50 from all good booksellers.* **Next month: Excel.**



Size will be

The light grey markings shown here appear when you click the Show ¶ button on the Standard toolbar or Formatting Palette. To select an entire column, click near the top of it – the cursor turns into a tiny arrow. To resize a row or column, drag the horizontal or vertical lines when the cursor turns into a double arrow. The resize box at lower right keeps all rows and columns in proportion as it expands or shrinks the entire table.

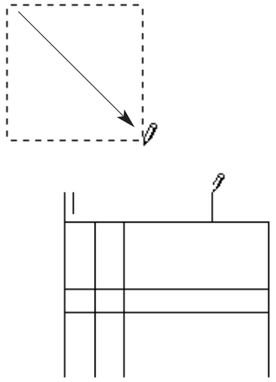


Table draw

Top: Drag diagonally to create the outer border of your table. Bottom: The Draw Table tool lets you create rows and columns of any size and shape just by drawing them.

To remove a cell or line you've just drawn, hold down the Shift key (or click the eraser tool on the Tables and Borders toolbar) and drag it across a line. The line promptly disappears.

When you're done designing your table's framework, dismiss the Tables and Borders toolbar. The insertion point is now blinking in your new table, ready to begin typing.

Typing into tables To type into a table cell, click in that cell. You can use the up or down arrow keys to change rows; press Tab and Shift-Tab to jump forward or backward through the cells. (There's not much call for tabs within cells – after all, you've already lined up text the way you like it. But if you need a Tab character, press Option-Tab.)

Pressing Return or Enter doesn't take you to the next cell; it puts a line break in the current cell. Get in the habit of pressing Tab to move on to the next cell. You can also navigate like this:

To move to:	Press these keys:
First cell in the row	Control-Home
Last cell in the row	Control-End
Top cell in the column	Control-Page Up
Bottom cell in the column	Control-Page Down
Highlight whole table	Option-Clear

As you type, text wraps within the cell, forcing the row to grow taller as necessary. To make the cell get wider as you type, choose Table➔AutoFit➔AutoFit to Contents. (Even then, the cell will get wider only until the table reaches the edge of the page – then the text will start to wrap down.)

Of course, this automatic wrapping is the principal charm of tables. But if you find yourself wishing Word would not wrap text in this way, select the cells in which you want wrapping turned off, and then choose Table➔Table Properties➔Cell tab. Click Options and uncheck the Wrap Text box. You can still enter as much text in a cell as you like, but the cell won't expand downwards to show it – it will just disappear beyond the cell boundary.

Selecting cells To cut, copy, or drag material from cells in a table, you must first select it, as with any other Word text. Because it's a table, however, you have a variety of options:

- Drag with the mouse, down, across, or diagonally over the cells you want.
- Click at the top of a column – the cursor changes into a downward-pointing arrow – to select an entire column. Likewise, click at the left of a row – the cursor changes into a right-slanting arrow – to select an entire row, or the thin, invisible selection bar at the left edge of a cell to highlight that cell. (Double-click this selection bar to highlight a whole row.)
- Click, press Shift, and click with the mouse to extend the selection one cell, row, or column at a time.
- Option-click anywhere in a column to select the entire column.
- Triple-click the cursor at the beginning of any row to select the entire table.
- Use the Shift key with any of the navigation keystrokes described previously.

Sizing rows and columns You can make a row taller or shorter, or a column wider or narrower, much the way you adjust Word's text boxes or margins; point to any line or boundary of a table without clicking; when the cursor turns into a double-sided arrow, drag.

You can also rely on Word's own automatic table features to help you design the table:

- *Balanced columns.* If you want a symmetrical, balanced look, select the rows and columns that you want to balance, then choose Table➔AutoFit➔Distribute Rows Evenly or Distribute Columns Evenly.
- *Automatic sizing.* Often, you want the columns to stretch and shrink depending on what you type into them. Or maybe you don't know what size you want or need the columns to be. In such cases, choose Table➔AutoFit➔AutoFit to Contents. As you work, the columns will stretch to just the width necessary to show the contents. For maximum room, Table➔AutoFit➔AutoFit to Window stretches your columns, however many of them there are, to fill the page from margin to margin.

At any time, you can resize the table using the mouse; you'll override and cancel the previous AutoFit setting. When you have the column widths right where you want them, choose AutoFit➔Fixed Column Width.

- *Numeric precision.* To set row and column sizes using exact measurements, select the rows or columns in question and then choose Table➔Table Properties.

The resulting dialog box (see "Property properly") contains size boxes where you can enter exact measurements.

For columns, you can also specify a percentage of the table width instead of a measurement in inches. For rows, you have the option of setting an exact measurement, or an "At least" measurement. When "At least" is chosen, the cells in that row will stretch downwards to wrap text as you type – even if you've turned off "Wrap Text" on the Cell tab.

- *The whole table.* To resize the table as a whole, drag the lower-right corner. The rows and columns remain evenly spaced or in the proportions you've chosen.

Adding rows and columns If you run out of room and need more rows at the bottom of your table, it's easy to add more: click the lower-right cell and press Tab. A new row appears.

To add a new row or column anywhere in your table, click in the table and then use the Table➔Insert submenu. Choose one of the options from the menu that appears: "Insert Columns to the Left," for example. (These commands are also available in the Insert Table pop-up button on the Tables and Borders toolbar.)

Adding multiple rows or columns at either end of your table, or anywhere within it, is a two-step process: First, highlight the same number of rows or columns as the ones you want to insert; to add two rows, select two existing rows.

Next, choose Table➔Insert, and one of the submenu options (Insert➔Rows Below, for example). Word instantly creates the requested number of new, empty rows or columns.

Inserting individual cells works much the same way. You can insert one cell at a time by choosing Table➔Insert➔Cells, or by using the Insert Table menu on the Tables and Borders toolbar. To insert multiple cells, select the equivalent number of existing cells at the desired location in your table before choosing from the menu.

Of course, you may find it more fun simply to click the Draw Table tool on the Tables and Borders toolbar and draw the extra columns and rows onto your table.

Deleting table parts It's easy to dismantle a table in various ways:

- *Deleting cells.* You can get rid of one or more cells by selecting them and choosing Table➔Delete➔Cells. Word asks if you want to move the remaining cells up or leftward to fill the void; choose one and click OK (or press Return).
- *Deleting rows and columns.* Select them (as shown in "Size well be") and choose Table➔Delete➔Rows (or Columns). You may find it faster to click anywhere in the row or column and choose Table➔Delete➔Cells, then choose a radio button to delete the entire row or column. Click OK to confirm the deletion.
- *Deleting the whole table.* Click in the table and choose Table➔Delete➔Table.

Formatting tables

When you click inside a table, the ever-responsive Formatting Palette sprouts a new set of formatting tools – a section called Table Cells. In conjunction with the existing Borders and Shading section, you have all the formatting controls you need. To use them, begin by highlighting the cells, rows, or columns that you want to work on. Then you're all set to format any of these table elements:

- Table border or gridlines. The Borders tools let you choose a line style (solid, dashed, and so on), colour, and weight (thickness in points). Clicking the Type button gives you a menu where you can choose which sides of the table you want borders to appear on. For instance, you may want only vertical lines inside the table and no outside border. Or you may want a heavier top border on the top row of cells only.
- Background shading in cells. Shading in a table is similar to a fill, except that you don't use the Fill palette; you use the Shading palette in the Formatting Palette (or Tables and Border toolbar).

AutoFormatting tables With creative combinations of borders, lines, and shading, you can make a table look right for anything from a bank's annual report to Teletubbies; but when you're in a hurry, you can choose a Table AutoFormat for instant good looks.

Click anywhere in your table and choose Table➔Table AutoFormat. There's a long list of potential formats in the list box at the left of the Table AutoFormat dialog box.

Click on each to see a preview. If you want to use some of the features in the format but not others (font, colour, and so on), then just turn on the boxes for the ones you wish to use.

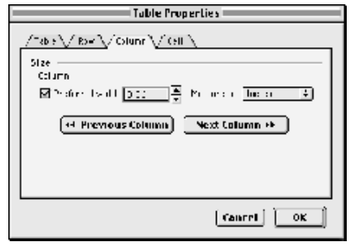
Many of the formats have a different typeface or shading applied to the top (heading) row, first column, last column, and so on.

The checkboxes in the "Apply special formats to" section control whether you take those features along with the rest of the format. For instance, if you're not using the last row of your table for totals, don't turn on the "Last row" box.

Text formatting within cells Like text anywhere in Word, you can change the direction and alignment of selected text in a table using the Format Text Direction command – a great effect for row or column labels. In the resulting dialog box, choose the text orientation – horizontal, vertical, or bottom-to-top – and click OK.

You can also make the text in selected cells hug the left or right side of its cell, or centre it right in the middle. To do that, choose Table➔Table Properties➔Cell tab, and choose the icon for right, centre, or left.

To use the same alignment for the entire table, choose the alignment using the buttons on the Table tab instead. **MW**



Property properly

When using the Table Properties dialog box, you can select a group of rows and columns and size them all at once, or you can use the Previous and Next buttons to work on each row or column one at a time.

TIP You can also eliminate certain table lines entirely. Just click the eraser tool on the top row of the Tables and Borders toolbar and drag along each line you want to disappear from the table.

Cell margins and spacing

To make your text look good in a table, you can adjust gap between the characters and the borderlines. You can also put a little space around the outside of each cell – an especially attractive effect on Web pages.

Just select one or more cells and choose Table➔Table Properties➔Cell tab. Click Options, and set measurements in the size boxes for the distance between the text and the top, bottom, left, and right edges of the cell. The "Same as the whole table" box changes the margins of the selected cell to match the default cell margins for the table. To set the default margins for all cells in the table at once, choose Table➔Table Properties➔Table tab; click Options and enter measurements in the "Default cell margins" boxes.

To put more spacing around the outside of cells, click anywhere in the table and choose Table➔Table Properties➔Table tab. Click Options and turn on "Allow spacing between cells"; enter a setting in the size box. When you click OK, that amount of white space will surround each cell, simulating the effect of thicker cell walls.

Your tip of the month wins an hp deskjet 990c m

We reward the tip of the month with an hp deskjet 990c m, worth £279. This graphite colour-printer offers amazing image quality and speed, and is bursting with gadgetry and cool extras.

• Wired wireless • Keyboard coaster • iTunes burning

Q&A/tips

Handy Mac tips and readers' questions answered. **By Christopher Breen**

Picture pasting

Q Can I paste pictures into a table cell in Microsoft Word 98? (It's just a matter of following the normal cut-&-paste commands with Word 2001.)

Chong Chee Nian

A The simple, though costly, answer to this problem is to upgrade to Word 2001, which pastes graphics into a cell as you'd expect. Performing this trick in Word 98 takes a bit more effort: With a picture ready to paste, click inside a cell and choose Paste Special from Word 98's Edit menu. In the dialog box that appears, select Picture and deselect the Float Over Text option. Click on OK, and the picture appears within the cell.

Wired wireless network

TIP Recently I asked for information on using an AirPort-less Mac to access the Internet over an AirPort network – but my problem wasn't so much getting on to the Web (Macs on an ethernet network can access the Web via an AirPort Base Station). Rather, I wanted to know how to easily terminate my connection from that AirPort-less Mac.

For those of you who've read the previous paragraph six times, and still have no idea what I'm talking about, here's a little insight. To connect an ethernet-networked Mac through an AirPort Base Station to the Web, you wire your network this way: Using a standard Cat 5 ethernet cable, connect an AirPort Base Station and the non-AirPort-equipped Mac to an ethernet hub. Run a phone line from the Base Station's modem port to a phone jack. In the Network window of the AirPort Admin Utility application, configure AirPort to share a single IP address using DHCP (Dynamic Host Configuration Protocol), and select both of these bridging options: Enable DHCP Server On Ethernet, and Enable AirPort To Ethernet Bridging (see "AirPort connection"). With this setup, any time you check your email or fire up a browser on your Mac, you'll initiate a dial-up connection through the Base Station. That's all well and good, but there's a catch: you can't easily break the dial-up connection from the Mac. That's because you can't run the AirPort software, which supplies a disconnect button, if your Mac doesn't have an AirPort card. I know someone's going to suggest it, but no, I don't care to wait for a period of inactivity to terminate the connection.

Happily, the solution is easier to explain than the problem. Damien Barrett recommended Larry Rosenstein's free AirPort Modem Utility, which allows you to initiate or terminate a dial-up connection simply by clicking on the utility's Connect or Disconnect button. And its small window displays the Base Station's IP address and connection status.

Segmenting sources

Q How do I segment a very large file across several Zip disks on the cheap?

Mac Maniac

A Although Aladdin Systems' StuffIt Deluxe (£65; Softline, 01883 745 111; **www.aladdinsys.com**) – and its accompanying drag-&-drop application, DropSegment – is my segmenting software of choice, as a die-hard penny-pincher, I respect this maniac's desire to use something less expensive.

That something is also available from Aladdin Systems – StuffIt Lite. This $30 application (from **www.aladdinsys.com**), allows you to chunk your files into any size you like by choosing Segmenting from the Translate menu. You can try it yourself after downloading the demo version from Aladdin's Web site.

But, if you're a real cheapskate, you'll opt for Apple's free Disk Copy Scripts (**http://asu.info.apple.com/**). This collection of add-on AppleScripts contains the Segment Image script that lets you divide image files into bite-size bits. To use it, simply place the Segment Image script into the Scripts folder inside the folder on your Mac containing Disk Copy (by default, Disk Copy is in the Utilities folder). Now drag the file you want to segment into a new folder. Launch Disk Copy, and then create an image file for the new folder that contains your original file, by selecting Create Image From Folder in the Image menu.

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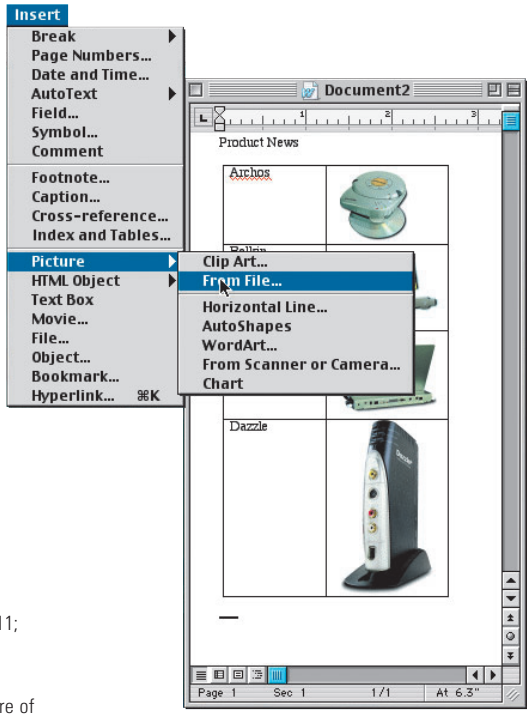
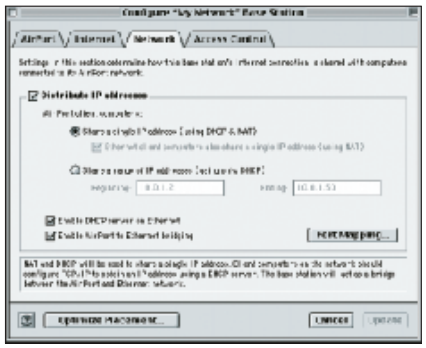


Picture perfect

See Picture pasting for tips on importing pictures into Word 98 tables.



AirPort connection

You can share an AirPort connection over an ethernet network by selecting the Enable AirPort To Ethernet Bridging option in the AirPort Admin Utility application.

Keyboard coaster

Q **What do you do after pouring sugary Nescafé into your keyboard? I turned my iMac's keyboard upside down, and let it drain. Later that morning my friendly local geek suggested that I use my hairdryer on the problem, which has left me with a crunchy keypad. Now what?**
Ellen Gilbert

A Unfortunately, you'll probably have to buy a new keyboard. There are plenty of USB mice available for Macs, but fewer keyboards because of the ⌘ key. Apple's new Pro Keyboard costs £45 (inc. VAT), and there are also some enhanced keyboards from Macally, such as its iKey Extended Keyboard (Mac Accessory Centre, 0191 296 1500).

Next, choose Segment Image from the Scripts menu and indicate whether you'd like to segment by size or number of parts. In the resulting Open dialog box, select the image file you just created, click on OK, and choose a location for the segmented files in the Save dialog box that appears. Now stand back while Disk Copy verifies and segments your file.

Eudora order

TIP To change the order in which Eudora sorts – from A-Z to Z-A or most-recent to least-recent, for example – Option-click on a column heading in a mailbox's window.

Alert PowerBook

TIP The titanium PowerBook G4, like some of Apple's other portables, sometimes fails to make sound after it's been woken from sleep. To make your Mac more audibly expressive, try this:

Flip open the Control Strip, click on the Sound Strip control strip module – the one that features a microphone and CD icon – and select Built In Mic (yes, even if that option is already selected). Now click on the Speaker Volume control strip module, and move the slider. When you do so, your Mac should once again produce sound.

Conserving colours

TIP It's awfully wasteful to replace an entire colour inkjet cartridge simply because one has consumed a single hue. However, you can contact a company, such as Prink (**www.prink.co.uk**), to inquire about its refillable ink cartridges. Designed to work with today's most popular ink-jet printers, these cartridges cost a fraction of the price of those sold by printer manufacturers. They can be refilled with ink, and despite implied threats to the contrary, using them shouldn't void your printer's warranty.

BT blunder

TIP James Churchill's letter in *Macworld*, May 2001 complaining about BT Anytime having "no auto-dial Mac version" is wrong.

Stop BT-bashing. The only thing you have to do manually is open the control panel for "remote access", click "setup" and tap in the new telephone number and a couple of other settings.

For exact instructions, go to the btinternet home page (**www.btinternet.com**), click "0800 number withdrawal" and look at the various options. Every one has a "Mac setup" button, so click one and follow the instructions. No problem.

Of course, the Windows crew couldn't manage that – they have to have a script to do it for them, hence the DOS file.
Graham Willis

Sorted SoundJam

TIP If you want to batch edit ID3 tags in Casady & Greene's SoundJam, just drag a folder full of MP3s to a playlist, highlight the playlist, and press ⌘-I. A dialog box – in which you can edit attributes such as artist, album, and year for the entire collection of MP3s – then appears. You can perform the same trick in Apple's iTunes by selecting a group of MP3s (sorry, the folder trick won't work) in a playlist and pressing ⌘-I.
Richard Hayes0

Missing Web

TIP If, while running OS X, your Mac tells you that it's unable to connect to the Internet with Software Update, Sherlock, or Mac Help, try going to **www.apple.com**, and then running one of the affected applications. Apple says that this problem crops up when DNS servers provide Software Update with an unexpected response. Connecting to Apple's site first works around this problem.

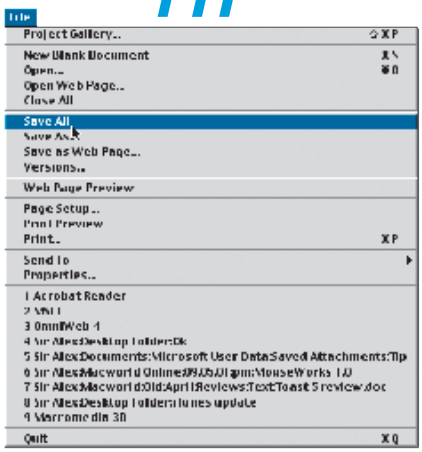
Outlook Express rules

TIP If you've imported a fair chunk of email into Outlook Express from another program, and would like to separate the wheat from the chaff (meaning you'd like to see how much of that imported mail is useless junk), try this trick:

Once the mail is imported and in a separate folder, Control-click on that folder and select Apply Junk Mail Filter from the contextual menu. When you do, Outlook Express will rifle through that mail and mark any messages it deems spam.

To collect all marked mail, just select Rules from the Tools menu, click the New button to create a new rule, give it a descriptive name like "Suspected Junk", select Is Junk Mail from the If pop-up menu, and select Move Message from the Then pop-up menu. In the Folder pop-up menu

TIP



Multi all

When you have multiple documents open in Microsoft Word, you can save or close them all in one fell swoop. To do this, hold down the Shift key and select Save All or Close All from the File menu.

Tip of the month: Speedy iTunes burns

TIP Dragging a playlist from iTunes – any version – to the Toast 4.x or later window produces an audio CD in a quarter of the time Disk Burner can. Simply create your playlist in iTunes, select it (A), and drag it accross to Toast. Then, in Toast, hit record (B).

Chris Webb

TIP Opt+double-clicking the title bar of a window will collapse all the open windows being used by that application.

Macworld's chief sub-editor Woody Phillips and contributing editor Christopher Breen answer readers' questions and select reader-submitted tips for this column. Send your question or tip (include your address and phone number) to Q&A, Macworld, 99 Gray's Inn Road, London, WC1X 8UT. You can also send an email, marked Q&A in the subject line, to **qanda@macworld.co.uk**. We pay £25 for each tip published here. We cannot make personal replies, so please do not include a stamped addressed envelope.

that appears to the right of the Move Message menu, select New Folder. In the resulting dialog box, give the folder a descriptive name (how about "Suspected Junk" again?) and click OK.

Now open the folder of imported mail, click once in the message pane, and press ⌘-A to select all of the messages. Finally – I swear, we're almost done – Control-click in this pane and select the Suspected Junk rule from the Apply Rules submenu. Outlook Express will now move all those tagged messages to a different folder where you can peruse them at your leisure.

PowerBook connections

TIP If you want to make a direct ethernet connection between two Macs, you normally have to either connect the Macs via an ethernet hub, or use a special ethernet crossover cable. This is not the case with the Titanium PowerBook. These PowerBooks allow you to make direct computer-to-computer connections with a standard ethernet cable.

Stock answer

TIP To get a quick quote on a favourite – or, perhaps, disappointing – stock, do the following:

Launch Netscape, and in the address field, type "quote" (without the quotes), followed by a space, and then the stock symbol – quote aapl, for example. Doing so produces the price of the stock, along with such information as yesterday's closing price and the stock's 52-week high and low.

Dock's dropped icons

TIP If OS X's Dock displays generic folder-icons when it should be showing application icons, try this:

Drag the LSApplications, LSClaimedTypes, and LSSchemes files to the trash. These files can be found inside the Preferences folder inside the Library folder inside the affected user's folder (if Johnny is signed on, for example, and the icons are generic, these files will be inside Johnny's user folder) inside the Users folder at the root level of the OS X disk.

Now, log out of OS X and log back in as the affected user.

Double updates

TIP If you are running Mac OS X, remember to use Software Update in both OS X and in OS 9.1, as different downloads will be selected for each operating system.

Burned burner

TIP If you have a Power Mac G4 or iMac with a CD-RW drive, and you've used your Software Restore disc to restore your software in place, you might lose the ability to burn a CD from the Finder. In order for the Burn Disc command to appear in the Finder's Special menu, you need Finder version 9.1.1 – a version that may not be on your Software Restore disc.

If you find yourself in such a pickle, simply reinstall Disc Burner. Doing so installs this newer version of the Finder and returns the Burn Disc command to the Finder.

SoundJam conflict

TIP If Casady & Greene's SoundJam can't seem to remember title information you've obtained via CDDB lookups, turn off QuickTime 4's AutoPlay option. To do so, select QuickTime Settings from the Control Panels submenu, and in the resulting window select AutoPlay from the pop-up menu. Finally, disable the Enable Audio CD AutoPlay option and close the control panel.

Sticky-business cards

TIP Some companies are producing a CD business card – which is business-card size, but incorporates a CD so that you can view company details on your PC. Although this idea works fine on a CD tray with a centre spindle, if you insert it into a new Mac with a slot loading CD/DVD drive, it will jam and the CD/DVD will need to be taken apart to remove the disk. This is not only expensive, but renders the CD/DVD useless until its removed.

David Carling

Andy Ihnatko

The Palm is great, but Apple needs to get back in the handheld-game

Palming off Apple

A new pocket computing device is coming from Apple. If the company isn't planning to release one soon, then it already has some prototypes built and working as proof-of-concepts. Or it's aggressively white-boarding basic ideas on what sort of handheld it hopes to make someday. If you don't believe that, maybe this one will work for you: a year or two ago when Steve Jobs modified the tic-tac-toe diagram he uses to represent Apple's hardware strategy, he left a square tantalizingly blank, so there's every reason to – Oh, who the hell am I fooling?

"Folks are still hot for Apple to reinterpret the personal digital assistant for this millennium – perhaps against all logic."

For all we know, Jobs could have intentionally left that space blank for tax purposes. At the moment, the most realistic analysis is that Apple's next handheld will be a flop, because the hyperintelligent supermonkeys who will probably rule the planet by then will lack the opposable thumbs.

Yet, folks are still hot for Apple to reinterpret the personal digital assistant for this millennium – perhaps against all logic. But, Palm owns the category. It's got a great product that's only getting greater.

Palm seems to grasp that the development of computer hardware and software is a creative endeavour – no less than a great movie, or album is – and that the price of market analysis is mediocrity.

Maybe the folks at Apple took that principle to the extreme with the Newton. If they had done a little more analysis before building 'em, perhaps they would have discovered that the only way users can fit Newton into convenient pockets is if they first borrow old tracksuits from their dads. But the Newton OS remains the gold standard in handheld operating systems. The Palm OS is at first forgivably clunky, and then endearingly so. But when you put a Palm next to the manifestly elegant and powerful aura of a Newton, you're left wondering why no one's making anything that can approach it... even today.

You think I'm kidding? Years after the Newton was discontinued – and after I finally determined that I was expending more calories keeping my Newton working with incompatible hardware and software than its developers had spent designing it – it still takes no fewer than three items to replace it.

My Palm is the best thing for managing contacts and appointments, has the best library of mobile apps and games, and has the most elegant operating system. My Compaq iPaq runs PocketPC, which is the first version of Windows CE that inspires me to write about it – calmly instead of causing me to jump up and down and shriek incoherently. And for the most important function of my Newton, I'm back to using a pocket sketchbook. No other pen-based handheld computer is worth a shaved elk hoof if you need to jot down notes longer than a sentence or two.

The Newton was ahead of its time. We're just now at the leading edge of the major cultural shift it anticipated: year after year, we're getting closer to the day when the majority of the adult population is made up of people who grew up with computers. The handheld computer is merely a thriving market space today, but before long those things are gonna be as common as underpants.

For now, Apple's sole presence in that enormous market space is, well, Palm's support for Mac OS. It's just wrong. If Palm is fulfilling every Macintosh user's expectations of a Mac handheld, why do cities burn every time there's a new rumour of an Apple Handheld? We all want Apple to get back into the handheld world, and not just because we're Apple freaks. We want it because it's an opportunity for Apple to do what it's great at: presenting truly fresh damn-the-torpedoes ideas.

Imagine Apple creating connectivity software that allowed the Mac to work more intimately with a Palm device than any Windows machine could, for starters.

After five or six pints, it may occur to you that the iPaq uses the StrongARM processor – the same one powering the next-generation Palms – and that both handhelds will have flashable ROMs, so their original operating systems can be wiped and replaced with something better, written by a company that's good at spotting and eliminating the most cumbersome aspects of the status quo.

If you keep drinking until your friends, ignoring your incoherent mumblings, trick you out of your car keys and put you to bed on the nearest sofa, you might drift off to sleep remembering that, hey, you know, Apple still owns the Newton OS. And wasn't it written for the StrongARM processor? What if. . . grrzzzzzzzzz. **MW**

ILLUSTRATION BY HENK DAWSON